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The Public Lighting Tables of the American Meter Company will be found in the page advertisement of that Company.

CONTENTS.

An Asterisk (*) denotes an illustrated article.

OFFICIAL NOTICES—
- Wrinkle Department Western Gas Association 401
- Seventeenth Annual Meeting, Ohio Gas Light Association 401

EDITORIALS—
- Briefly Told 402
  Coming Events Cast Their Shadows Before—The Seventeenth Annual Meeting, Ohio Gas Light Association—Notes.
- Proceedings, Thirty-first Annual Meeting, New England Association of Gas Engineers.—Official Report.—Revised by the Secretary—Continued from Page 372 402
  Second Day, Morning Session—An Invitation to Visit the Works of the New England Gas and Coke Company—Selling Gas, by Mr. C. J. R. Humphreys—Discussion—Report of Committee on President's Address—A Telegram of Condolence—How They Do Things on the Other Side, by Mr. Fred. H. Shelton—Discussion.
- Mr. W. I. Battin Goes to Chicago 411
- *An Oil Cup for Pressure Oiling Systems 412
- Switchboard Connections for Standardizing Ammeters 412

ITEMS OF INTEREST FROM VARIOUS LOCALITIES 412
The Aberdeen (So. Dak.) Company Changes Hands—Mr. J. Gibbons, Jr., Takes Charge at Seneca Falls, N. Y.—Mr. A. H. Merritt in Charge at Waverly, N. Y.—Sale of the Morristown, N. J. Company—Gas Rates, San Francisco, Cal.—Annual Meeting, Hudson County, N. J., Company—Cheaper Gas for Oswego—Reorganization, Bucyrus, Ohio—The Revere (Mass.) Gas Ordinance—The Public Municipal Lighting Plant, Carthage, Mo.—The De Kalb (Ills.) Gas Company—Proposed Gas Works for Blue Island, Ills.—Refunding Bonds, Louisville, Ky.—Changes at Racine, Wis.—Annual Meeting, Paterson and Passaic, N. J., Company—Something from Chico, Cal.—An Important Finding—The Text of a Ridiculous Measure—Cheaper Gas for Elgin, Ills.—Mr. Walbridge Goes to Grand Rapids, Mich.—Gas Rates, Vallejo, Cal.—Gas Rate Revision, North Adams, Mass.—And Many Other Items.

- The Market for Gas Securities 414

[OFFICIAL NOTICE.]

Wrinkle Department, Western Gas Association.

To the Members of the Western Gas Association—Gentlemen: The season is approaching for the collection of Wrinkles for the current year for presentation to the Western Gas Association at its coming meeting. All members and friends of the Association are reminded and invited to kindly forward, to the Wrinkle Editor as below, such ideas and devices as are suitable for this Department of the Association's work. F. H. SHELTON, No. 112 North Broad street, Philadelphia.

[OFFICIAL NOTICE.]

Seventeenth Annual Meeting, Ohio Gas Light Association.

OFFICE OF THE SECRETARY,
DELAWARE, OHIO, FEBRUARY 14, 1901.

The 17th annual meeting of the Ohio Gas Light Association will be held at Dayton, Ohio, March 20th and 21st, 1901.

The Hotel Beckel has been selected as the headquarters of the Association, and the business sessions will be conducted in assembly hall of the National Cash Register Company, one block distant from the Hotel.

The President, Mr. George Whysall, of Springfield, Ohio, will call the meeting to order on Wednesday, March 20th, at 9:30 A. M.

The following papers will be presented:

"Some Observations, Pessimistic and Otherwise;" by Mr. Charles R. Faben, Jr., Toledo, Ohio.

"Gas Pumping Stations;" by Mr. E. E. Eysenbach, Columbus, Ohio.

"Business Outside the Usual Channel;" by Mr. F. W. Stone, Ashtabula, Ohio.

"The Proportional Station Meter;" by Mr. George W. Barnes, Pittsburg, Pa.

"More about Concrete Tanks;" by Mr. C. W. Andrews, Hamilton, Ohio.

Two new attractions, which should prove most interesting, have been created for this meeting, viz.: A "Wrinkle Department;" edited by Mr. Henry L. Doherty, of Denver, Col.; and a "Novelty Advertising Department," edited by Mr. B. W. Perkins, of South Bend, Ind.

The Question Box will be given special consideration. Each member is requested to make contributions for it and send them to the Secretary not later than March 6th, so that they may be printed.

An opportunity will be given any of the speakers at the meeting to correct their remarks before leaving Dayton, but not after; as all the reports will be turned over to the printers immediately after the adjournment of the meeting.

The Hotel Beckel is conducted on the American plan and the rates for the meeting will be: $2.50 to $4 per day. The Beckel hopes to entertain nearly all of the Association, and will put forth every effort to make the members comfortable. Other hotels, the Phillips, Atlas and Algonquin, are within a block of the Beckel, and their rates are from $2 to $3 per day, American plan. The most satisfactory quarters are always obtained by writing in advance to the hotel people.

The Secretary will furnish with pleasure application blanks for membership, and any further information which may be desired relative to the meeting.

T. C. JONES, Secretary.

LIBRARY OF CONGRESS.

BRIEFLY TOLD.

Coming Events Cast Their Shadows Before.—In the reorganizing of the actual conditions that are to govern the gas and electric light supply of New York city many weighty matters are involved. Heretofore, or for the past 4 years at least, the financiers in the reorganization have had their innings; and during the contest many pet batsmen were sent to the tent, while not a few pet bowlers were shown to have lost their speed. The financial aspect of the game, however, is about at an end, so far as the real stock-and-bond aspect of the play is concerned, and, when one looks over the new capitalization of the Consolidated Gas Company, comparing that with what it was in 1884, the reviewer may be forgiven for holding that those who manipulated it manipulated it well—that is, of course, if volume with relative value counts. Away and apart from the capital or its worth comes the second trial, which tribulation rests upon the shoulders of the men who are to make and distribute the gas and electricity that will enable the financiers to say, "We knew we were right when we said *our* business would pay so much of a return on the securities that we manufactured and distributed." The foregoing meandering sentences are inspired by the fact that the main positions, in respect of the engineering staff of the Consolidated Gas Company, were announced last week. According to our information, and it looks to have the stamp of accuracy, the engineering head and hands of the Company have been thus named: Engineer-in-Chief, Mr. William H. Bradley—no one else ever had a chance for the place; Engineer in charge of Distribution, Mr. A. M. Smith; Engineer in charge of Manufacture, Mr. George E. Woods; Engineer in charge of Construction, Mr. Alten S. Miller. These are the men who will have to bear the brunt of the construction of what will be at the termination of its building the greatest gas works in the world. And Mr. J. Pierpont Morgan hasn't even a single finger in the pie. Neither has our esteemed old friend, Mr. Russell Sage. Good luck to those to whom has been committed the custody of a truly tremendous task.

The Seventeenth Annual Meeting of the Ohio Gas Light Association.—Secretary Jones has, at the instigation of President Whysall, the alert assistance of the local committee, the exercise of his own clever judgment and the loyal aid of the members generally, been put in the pleasant position of securely announcing that the 17th meeting of the Ohio Association is to be a record breaker. The sessions are to be held in Dayton, Wednesday and Thursday of this week; but as to that fact, and of others, concerning the convention, Secretary Jones has given ample notice in the circulars that have been appearing in the Journal for some weeks back. Every advance arrangement possible has been made for the comfort of the Association and its guests, and those who fail of proper quarters on demand have only themselves to blame; but there will not be any discomfort. The paper list is an attractive one, and many will be especially interested in listening to the recital of Mr. Faben's "Observations." How any such could be "pessimistic" is beyond us; for a sunnier gas man never lived than he, the worthy son of a straightforward sire. However, the "Otherwise" in the title of Mr. Faben's paper lets him out on that score; for the "Otherwise" will certainly predominate. The meeting is bound to be a good one, and we know that, if the presence of a large delegation from our section is to count, such representation will be on hand.

Notes.—The proprietors of the Beloit (Wis.) Gas Light and Coke Company have awarded a contract to the Western Gas Construction Company, of Fort Wayne, Ind., for the building of a new coal gas plant, on the Western Company's latest plans.——Recent books to hand are: "Electric Lighting," second volume, by Francis Crocker, E.M., Ph.D., which is offered for sale by the D. Van Nostrand Company, of New York, at the price of $3 per volume. The book deals with "Distributing Systems and Lamps," and it is a worthy sequel to its predecessor, which had to do, and to do clear and positive, with the dynamics, etc., of electrical lighting working. The book is also a credit to its publishers, from a printer's point of view.——The other book at hand is one by Mr. C. E. Brackenbury, of London, England. It carries 6 chapters, notable of which is the second, for it relates to inclined retorts. To this subject the author devotes 11 pages of description, which space includes 9 handsome illustrations. The other matter has to do with "Stoking Machinery for Horizontal Retorts," "Coke Plant," "Carburetted Water Gas," and "Purifying Plant." Its precise title is "Modern Methods of Saving Labor in Gas Works," and its publishers are, Messrs. P. King & Son, Great Smith street, Westminster, London.

Official Report.—Revised by the Secretary.—Continued from Page 372.]

PROCEEDINGS, THIRTY-FIRST ANNUAL MEETING, NEW ENGLAND ASSOCIATION OF GAS ENGINEERS.

Held at Young's Hotel, Boston, Mass., Feb. 19 and 20, 1901.

Second Day, Feb. 20—Morning Session.

The President, in calling the Association to order for the sessions of the second day, asked the members to be prompt in their attendance and attention, since it was proposed that a visit to the Everett works of the New England Gas and Coke Company should be made early in the afternoon.

An Invitation to Visit the Works of the New England Gas and Coke Company.

The President then introduced Mr. G. H. Finn, General Manager of the New England Gas and Coke Company, who formally invited the Association to inspect the Everett plant at as early an hour during the afternoon as it was possible to appoint. The President thanked Mr. Finn and his Company for the invitation, and called upon Mr. C. J. R. Humphreys, of Lawrence, Mass., to read his paper on

SELLING GAS.

A very prosaic title for a paper is, perhaps, your unuttered criticism; and I am not going to take issue with you on that point. On the contrary I stand ready to admit that the title sounds—what shall I say, very tiresome? But be that as it may, I am more and more impressed with the importance of the subject I have selected for your consideration. I daily grow in the knowledge of the fact that the prosperity of a company depends largely on the proper selling of its product. I have had this brought home to me on many occasions when, having to deal with the valuing and remodelling of gas plants, it has become perfectly clear to me that the factor of prime importance in considering that part of the problem, called the future earning power of the property, has been the quantity of gas which the plant could be made to sell. Nor should we be surprised at this thought, for it is in a line with other commercial ventures, where we note that the utmost importance is given to the selling department. You will have to pause but a moment and bring to your mind the recollections of the vast sums of money spent by many firms in advertising and in keeping commercial travelers on the road, to feel that well known facts within your memory verify my assertion that in general mercantile life today selling the product is the controlling feature of business life. I, therefore, feel, while the subject I have chosen is prosaic and dull, its importance must stand as my justification in presenting for your consideration some few thoughts on this theme.

Let us look for a moment at some of the methods to be pursued in gaining new business, and in this connection it will I think be generally conceded that the objective point which it is necessary to keep immediately in view, is to attract the attention of those from whom we wish to secure business; and undoubtedly there are many ways to work out this scheme.

I sometimes hear a manager make the remark that he never secured any business from advertising, but was successful when he resorted to canvassing, or that advertising has paid well and canvassing has been a failure, or that some other plan he has employed has produced excellent results. For my own part I have never been able to differentiate between the various plans I have adopted to secure the attention of the desired customers, and I think we are prone to waste thought on this aspect of the case, and we should be ready to feel that all the schemes we are likely to pursue will, in a greater or lesser degree, converge to the one point—that is, the increase of our business. I remember well, when the Lungren lamp first came upon the market, I put a canvasser to work on the business streets, and in short order had several hundred of these burners lighting the stores of the city; and when the Welsbach became a commercial success I seemed to secure good value from advertising the new light by having a large burner painted on one of our wagons; it was handsomely done—showy and attractive, it immediately caught the attention of the people.

I believe firmly that well nigh all advertising plans have their value, and that the canvasser enters into and is a large part of our problem. Other factors are the well displayed "ad." in the daily papers; the pamphlet, which touches upon some one topic in connection with the gas selling theme; the neat handbill; the large posters placed conspicuously around the city; these are but other means to work in and help the canvasser, and in turn the canvasser helps the various other

plans we may adopt. Suppose, seeing a store lighted by some other means than gas, we should send a canvasser to talk with the proprietor. He may perhaps find the latter grumpy or busy—some printed matter left in his hand may do some good. Say there is a store near by lighted by gas, but poorly, owing to old and defective burners; let us go to the latter and secure his consent to place a couple of Welsbachs in his window, and later call the attention of the desired customer to this window, and perhaps we may land our man. If not, perchance another circular we may have in hand, treating of the Welsbach in a different vein, may catch him; but if he is still obdurate we might offer to put in a couple of burners, even if we have to do a little free piping, and the chances are we have secured a customer. We should not use too much time or waste too many pencils in figuring whether the profit we will make out of this customer will pay for the time and energy expended in securing him. I am sure if we take so narrow a view of the problem we will miss our game, because we cannot gauge the benefit that customer will be to us. His neighbors, in competition with him, must do likewise, and we do not know how far reaching may be the influence of this one consumer. We have secured a customer; that is sufficient. Let our judgment as to the wisdom of the policy rest on the results of several years' work.

Again, there is a householder whose name is not on our gas ledger. How will we treat the problem? Send a canvasser to call there in day time and see the lady of the house? Well and good, let us try it; but if the canvasser meets with a rather snappy reception we have only run up against what we should have expected. But you say the canvasser is thick-skinned, he does not mind and will keep at it. For the good of the business we must desist. Approach the problem in some other way. We were perfectly well aware that the lady would not care to discuss the matter until it had first been considered in family council. Get the subject up there for discussion.

We are using our space in the daily papers to set forth some of the advantages of gas for lighting. To day we have some closely set type matter in the center of this space; to morrow we have a cut of a Welsbach or an attractive reading stand, and we send our proposed customer marked copies of the paper. We should have a small booklet in hand treating of one phase of the subject very concisely—not over 400 words in length—it need not be expensive, but it has a catchy cover. Send them one; but they do not call to apply for gas. Very well, write them that a representative of the company will call on them (naming the time). We may be met with the remark that they have not used gas, and that they are afraid of it. Ask them to call at the office, and then in the show room—of course, all companies should have one—we can show them the different burners and stands and make them see what an excellent reading light a Welsbach makes. We have there different shades of many shapes and colors, and will doubtless have something that will attract them. If, however, they will not call at the office we might take a pretty table-stand-and-light up there in the evening, and even though we cannot show the lamp in action, it will be a help. Leave them a booklet on gas heating stoves, and later another one on the gas range. If all such work fails, we can probably gain our point by offering to put in a gas range on 30 days' trial at our own expense, and then, while this is being done, put up a bracket light in the kitchen—the gas pipes will grow.

I think it well to bear in mind that we wish to secure customers for lighting. It is well to offer this gentle reminder in these days when we are putting so much energy into the extension of the use of gas for purposes other than lighting.

At times we hear the remark made that the Welsbach burner has reduced the gas sales for lighting purposes; for my own part I do not think this should be so. We have here at our command in the Welsbach a powerful aid to use in our efforts to secure new business. The low cost at which lighting can be done by means of this burner, the brilliancy of the light, the readiness with which the burner lends itself to effective schemes for lighting, are but some of the reasons why I am urgent in the claim that the Welsbach is a means which, if rightly employed, will lead to the increasing of our lighting business. It goes without saying that we should have in our own office examples of this means of lighting, both effective and striking.

Let us now consider some of the secondary uses of gas, for these are well worthy of our careful study and persistent encouragement, and we have rather more scope to our scheme in calling the attention of the people to the uses to which our product can here be put. In advertising we have the opportunity to display considerable originality in designing our "ads.," and, in a general way, it may be said such remarks should be administered in small doses, both in the daily papers and such circulars as may be sent out. We should have some printed matter always in hand. The small booklet, dealing with, say, one aspect of the gas range question, and containing a few receipts from some well known expert, is a good means of directing attention to this particular branch of the industry. Then, again, the gas bill can be usefully employed as a reminder. I have before now arranged with grocers to give them brown paper bags with a gas stove "ad." printed thereon, and the indications were that these directed attention to the usefulness of gas in the kitchen; and I am of the opinion that it is most advantageous to use many of these means in advance of the canvasser in order to excite curiosity and interest prior to the personal call. I think, too, that lady canvassers can be used to good advantage, because the lady householder, unacquainted with the gas stove, is so ready to raise objection to the effect that it will not do certain kinds of work, and these contentions are well met when the caller can speak from personal knowledge and experience and discuss the subject on lines which clearly show a personal acquaintance with the details involved. A proposition from the canvasser, to the effect that the gas company will set a stove free for 30 days' trial, will generally meet the objections of the most obdurate, if the householder takes sufficient interest to discuss the subject at all. When, however, all these means fail to interest a party, the end can sometimes be attained when noting the person calls to pay her bill—if she already be a light customer; and we should then be prepared to show her the results of the gas range, in the shape of well baked bread or a nicely browned cake. In fact, it is a good paying investment to have some articles, cooked by a gas stove, on exhibition during the days when the office is most crowded. I have followed this plan with, I think, excellent results.

The cooking lecture also stands as an effective means at our hands; not only the lecture in a large hall to which the public is generally admitted, but the informal talks in perhaps the company's office building on certain days of the week, when special invitations are sent out to a limited number. Some gas companies have tried the neighborhood plan, setting up a gas range in a customer's house and then inviting the neighbors in to see it operated. Others have gone so far as to set up a stove on the sidewalk, and in that way excite the curiosity and win the attention of the people. I have heard of these schemes being worked with good results, but I cannot speak from experience as to either plan.

Many companies approach the problem from an altogether different standpoint. They say it is better for a gas company not to appear openly in the matter, that the stove dealers should be used as allies, and a bonus should be given them for every stove they place. In support of this theory we are met by the contention that the public feel suspicious of gas companies, etc., etc. Personally I have little patience with the latter thought, and my experience is not favorable to this plan for catching the attention of the people. There the gas stove is likely to be shown with a background of other stoves, and it does not stand out prominently, whereas in the show windows of the gas office the display of gas ranges is more than conspicuous.

It, however, is not my purpose here to allude to all the methods to be used in bringing to the attention of the people the product we have for sale and that they need. All I am attempting to do is to say in a round-about way that if we have anything to sell we must put much thought into the problem of bringing our goods to the attention of those whose trade we seek, and that all kinds of plans must be adopted. The subject must constantly be on one's mind, and we must keep everlastingly at it.

We now come to the discussion of the question how we can help and aid a party in his desire to use our product; and here we are brought face to face with the question whether we shall make the party pay full price for all the appliances by which the gas can be conducted to the burning point, or whether we shall make it easy for him by lightening the cost of installation. Shall we charge for services, or run them free? Shall we charge for meter connections, or retain undisputed ownership of the same? For my own part, basing my judgment on my own experience, I favor free services and free meter connections. I am in favor of making it thus the easier for a party to obtain the goods we have to sell. I have oftentimes been met by the statement that a customer is perfectly willing to pay for the service, and if such charge be not made it is so much money thrown away. This I can hardly follow. I am, however, willing to admit that such charges would not retard the growth as much in some cities known for their wealth as in other places where people must perforce count costs carefully; still I cannot help but feel, having in mind my own experience, that free services and free meters would add to the number of consumers in any place. In England, as we all know, the sales of gas have been enormously increased by the practice adopted in many

places of piping houses and putting up fixtures, and charging, in one form or another, a rental on the cost of the installation. This is a valuable means of getting a certain line of trade, and has been tried I think to a limited extent in this country.

In the matter of aiding our customers in adopting the gas range we meet with very divergent views among the members of our profession. Some managers hold that it is not good policy to help the would-be customer at all, but leave the business to be cared for by the stove dealers. Others will sell the stoves at a profit over the cost as set up. Again in other cities we find the practice of selling the stove at its cost to the company and setting it up free, while some figure to take a loss of $5, others more, on each stove sold. Here, again, it will be found that the same rule cannot hold in all cities and towns; the size of the place, the character of the population, the amount of wealth therein, must all be considered as factors in the proposition. But I think those companies which have taken the most trouble in handling the business, have put the most thought into it and have pursued the most liberal policy, are those which have met with the greatest measure of success. Surely it is less troublous to stand by and allow this business to be handled by the outside trade, but there are in my opinion many reasons why this is not generally good policy; and one reason, by no means unimportant, is that the gas manager can lead a customer aright in choosing a stove much better than the average tradesman. Remember, a gas stove in active operation is there for good or ill—you will hear of it again in many others places, either by good report or bad, and one of the important considerations to be kept constantly in mind is to see to it that every gas range sold is a standing advertisement of the business. As to how much money shall be lost on a gas stove, I can only say each manager must consider for himself; but my experience leads me to say that, in all the places where I have come into close touch with the business, it has appeared that the cheaper the stove is sold the more are placed in position. Some managers prefer to fix a price for the stove and include in that 5,000 feet of gas, so that a customer buying and paying for a range can use 5,000 feet of gas in that stove without further cost. Another plan, followed with success, is to connect up a range and say to the customer when he has burned 20,000 feet of gas through the stove the range is his. Personally I have not tried either of these plans, so cannot speak from knowledge; but it would seem that one out to these schemes is that they involve separate meters for the stoves From my correspondence with other managers, I am inclined to think that the most general way of handling the gas range is to sell the stove at about $1 below cost and set it up free. I favor selling ranges below cost, and go farther and allow a customer to take the stove on the instalment plan, if he so desires. I also think we have added to the popularity of the scheme of cooking by gas in having a lady, who is an excellent cook, follow up every range sold and instruct the purchaser how to use it, and to demonstrate the correctness of our claim that all cooking can be done on the gas range better than on any other kind of a cooking stove.

I have found that circulars put into the hands of architects and persons about to build, giving some points on house piping, showing how a pipe should be run from the meter to the kitchen for the gas stove, as the house is being built, bore good fruit. And a suggestion that, in new houses, arrangements should be made to heat the kitchen from the general heating system has given us all-year customers for the gas range.

What I have said about the conduct of the gas range business applies in part to gas for heating purposes. A booklet on this subject is always in order. The space in the daily papers can be used at the proper seasons advantageously. The gas bills also can be made to carry a message on this subject, and some companies do not hesitate to use the canvasser for the heating stove as well as for the gas range; but the fact that the heating stove is so much smaller in cost makes it easier for the company to sell it without taking a loss. I, however, have not as yet seen anything in the more general subject of gas heating—that is, from a central point like the furnace—which leads me to look at this problem very hopefully.

There are many uses to which gas can be put in a mechanical way, notably in the matter of power, but these are very largely governed by local conditions, and everyone should make a study of the industries in his own place to determine what can be done in this direction. The gas engine business can I think best be handled by personal work—visiting each place where power is or could be used, and showing the proprietor how the gas engine could be adopted to his advantage. Gas is used largely in laundries, in can factories, and for general soldering purposes; and, when employed on a large scale, air under pressure is used to make the work more rapid. For japanning, brazing and many other purposes can gas well be used, and this must be made a subject of study in each locality. Prepayment meters stand as a valuable adjunct in helping customers to the use of gas; the fact that people can pay for a quarter's worth of gas as they need it puts the various gas appliances within reach of a large portion of the community who hitherto have not had the benefit of gas. And now that this style of meter has passed beyond the experimental stage, I feel sure it has a great future for itself, and will act as an aid in the extension of the use of gas to a degree which we now fail to realize.

Working on the lines indicated, I have increased the house and store business 300 per cent. in 10 years in a city which has not had a very rapid growth, which is to my mind an ample justification for the policy I have pursued in selling gas; and I am confident I could not have attained these figures had I not resorted to several of the plans I have noted in this paper, and many others, for promoting the sale of our product.

If the objection is raised that, where gas is used for so many purposes and where a company is supposed to keep in such close touch with all the innumerable uses to which gas can be put, the entire services of one man would be required for this department, I answer, "Yes; and a good man." In all but the smallest of companies it pays, in my judgment, to organize a selling department, and the man in charge thereof should compare favorably with the other heads of departments. Again, I ask you to direct your thoughts to other industries, and do we not there find that the selling department is a very large and important part of every concern's organization? In moderate sized establishments do we not find as well equipped and as well paid men in charge of the sales as in the manufacture of the goods? And in large corporations do we not find the selling department intrusted to a very large firm, whose long experience and thorough knowledge of the ways of the public pre-eminently fit them for selling the product? Are the conditions surrounding the gas business radically different? Somewhat at variance with the conditions in general trade I will admit, but not so dissimilar as to destroy the comparison. And so I contend that the selling department of a gas company should be organized on the same intelligent lines as prevail in the manufacturing department, and should be under the immediate charge of as well trained an executive as the other divisions of the company's work. I am sure the large gas companies could well afford to have the best of talent at the head of the sale's department.

Another thought I would offer would be that where we make our mistake—but I think I must qualify the word mistake later—is in not reconciling ourselves to a very considerable loss in the selling department for a few years. In several cities in the West and Middle States many gas companies have allowed thousands of dollars to be spent in 1 or 2 years in this direction, where we in this section would not spend as many hundreds of dollars. But the conditions are different, and as I stated a moment ago, I must qualify the word "mistake," because in many instances where we try to keep our losses down in this direction it is not because we do not appreciate the wisdom of being more liberal in this regard, but because we have the footing of the balance sheet at the end of the year in mind, and we must regulate our losses to what we can afford out of revenue, whereas in many other localities the companies take greater liberty in charging up the money spent in obtaining new business.

This brings me to another point. The money spent in securing new business, in all the various means of advertising, in running free services and setting meters without charge, and in selling gas stoves at low cost, while not, when considered on conservative lines, a proper charge against capital account, yet is not strictly a charge against the revenue for the current year. And if it is taken care of in the latter way the expenditures are kept down to such narrow limits as to make the growth comparatively slow, and, therefore, I feel the better plan would be to spend in 1 year the amount which would ordinarily be expended in 5 or 10 years and to make of it a special account which would be charged off in a given number of years. Particularly would I advocate this policy where a company has in the past not devoted much attention to the selling of gas, and I would urge such a concern to crowd into 1 year the work which a more conservative policy would spread over 5 years, and in that way gain the full increment of new business as promptly as possible.

In conclusion I would urge these thoughts. The selling of our product demands from us our best consideration, and the immediate oversight of this part of our business should be under an able man who, in even a moderate sized company, would devote all his time to this matter, and that he should keep in such close touch with the business and the peculiarities of his own territory that he would be ever finding new uses to which gas could be put.

I would urge the utmost liberality in adopting different plans for nging to the attention of the people the product we have to offer, d not be too ready to think that any kind of intelligent advertising s not pay, but to have confidence that the different plans work in e with the other.

I would urge a like liberality in dealing with the customer in help- him to obtain the appliances he may need for the use of the gas, d that we take proper means to instruct the customer that he may the best results from the appliances.

Finally, I would raise the question whether it would not be wise for is Association, through a proper bureau appointed for that purpose, take steps to ascertain from the members the different purposes for ich gas is used in each member's territory; such information, ouped, and placed in the hands of each member, would, I think, be a ther aid to the object which I am sure we all have at heart—the in- ase of our gas sales.

Discussion.

The President—Gentlemen, I think I am not very far afield in say- that this is the most important paper presented to us thus far at this eting. I want to indorse the suggestion made at the close of the per in regard to the appointment of a committee of this Association look into the methods used by the various members of the Association d also as to what purposes gas is used for. We believe in Boston in ling stoves at less than cost, except when it comes to selling on the talment plan, in which case we try to get at a just cost. We are ing the experiment of giving a reduced price beyond the advertised count for 1 stove to persons who use 5 stoves, 10 stoves and 25 stoves, pectively, so that quite a low price is given on the stoves in large mbers. We believe in advertising, provided the advertising is done the right time. You may readily waste a great deal of money by ertising a device when the people are not looking or hunting for particular device. We advertise on our meter team. We adver with posters. We advertise by sending out leaflets, which have so been printed in our own printing department. We have made an angement that every permit granted for a new building is to be re- ted, and the solicitors call on the architect and the builder and the er who do the work on that building. We have here a past master in question of selling gas and gas appliances. He is familiarly known a great many of you as the "Man from Trenton." Excuse me, Mr. es, for calling on you so familiarly, but I thought you would not use.

Mr. Moses—In our part of New Jersey we sell gas stoves the year round; act we have no particular season for gas stoves there. In Trenton, ty of sixty-odd thousand inhabitants, we are selling 18 to 20 stoves y at present. This is our season. We challenge all comers on gas fuel for cooking—everybody, anything. We claim we can cook aper with gas than with any other known fuel. We advertise that so; and it is so. We advertise the year round, and we sell stoves year round. The gas stovemen come there with overcoats on to me stoves, and they sell a few. I try all means of advertising, and pretty hard to tell which is the best, but we keep before the people the time. The biggest advertisement we put out was in the latter of August, 1900, when the season was over for most gas stovemen, we sold more stoves after August than we did before. We sold in nton 2,500 or 2,600 stoves last year. We have orders for 600 or 800 e to be set this season. We are taking orders now for stoves to be next May, so that they will get them in early. Last year we were or 5 weeks behind in August setting stoves; this year we are set- them early, so that they can have them. We advertise in the y papers, in street cars, and by any means we can get hold of, e especially with the neighbors. It will be easier to sell 2,000 es this year than it was to sell the 2,600 last year, although there fewer people in need of them. I do not know that I can add any- g more, except to say, "Sell stoves."

Member—What do you sell them at?

Mr. Moses—At very near cost. A stove that costs us $10.25 we sell even $10—it is so hard to make the change, and we have to sel so fast.

Mr. Allyn—Has Mr. Moses ever tried selling on the instalment

Mr. Moses—We sell them on most any plan. Last year we sold on the instalment plan and collected the instalment when we ct the gas bills. We had very little loss. It is surprising. We stoves to anybody, and then look them up afterwards. I put stoves houses, the floors of which were not carpeted; the poorer the le the better the stoves went. Even now you would be surprised. biggest output is in the morning. People say they don't use the gas stove in the winter; but they do in the morning, you know. Their coal stove being a little slow in action they get their breakfast on the gas range, because they have to hurry to work. The women folk who work at decorating in the potteries get breakfast on the gas stove and away they go. They cook on the gas stoves because it is quicker. The women folks get home just in time to make a meal in 3 minutes and don't have to waste time in starting the fire. Our output shows it in the morning, which is the heaviest output in the week days, but on Sunday when the people are at home, they keep the fires going through the daytime to warm the house, and in the morning they use the gas stove. Some gentlemen here tell me that many cooks prefer to use the gas stove because the coal stove is slow. Get the gas range in and they will use it; put it alongside the coal stove, and the comparison will do the rest.

Mr. Allyn—I see it pays to touch the gentleman up occasionally.

Mr. Moses—Excuse me, I did not answer your question, did I? I was speaking about selling stoves.

Mr. Allyn—Not exactly.

Mr. Moses—This year we are going to sell stoves on the instalment plan. We are selling them for $10 cash, and from $11 to $12 on the instalment plan—$3 down and $1 a month thereafter. We make a difference in the price so that they will pay cash for them. But we will have no difficulty in selling stoves at $10, for cheap selling rates for gas means cheap fuel.

Mr. Allyn—My reason for asking the question was this. We have had no experience whatever in selling on the instalment plan. We have sold directly for cash, and I must say my preference would be for that plan. It would seem to me that, selling on the instalment plan, a good many stoves would come back in a condition which would render it hard to dispose of them at almost any price. That may not be so, but it would seem to me that a great many people might pay one or two instalments and then stop. Then, I suppose, the stove comes back to the gas company. I know when we introduced the Lungren lamps we sold them on the instalment plan, or rather leased them, and after a lamp had been out 5 or 6 months and came back to us no one wanted that lamp installed, but insisted on having new lamps. It may not be so with the gas stove.

Mr. Moses—That is pretty near so, but we take what we call stoves that come back. People make one or two payments and move out of town. It is about the only way we get the stoves back. If they are going to live there they have got to use the gas stove, that is all. But if you get one or two payments on it, when it comes back you can sell it. We clean it, remove the grease stains, tell them it has been used a little while, and sell it for $7 or $8. Some people would take them at that price. You put what you call a second hand stove on the floor with the rest. They are clean and nice, to all appearance just as good as the others—which they are—and if they can save a couple of dollars a great many people will take them. Then occasionally we give a stove away to a church or lodge. All the churches in our town have stoves. They have an eating room, or something like that—it is getting so that many people now go to church when they think they will get something to eat; oyster suppers and the like. We put stoves in all the fire houses for the firemen to use. The people come in from round the neighborhood and see them in the fire engine houses. The firemen often use them to cook their coffee on, and the neighbors come in and see them. We give them $1 apiece for every stove they sell, and we get out quite a few in that way.

The President—I think Mr. Allyn would find out if he kept a stove shop that, with 1 or 2 payments on a stove, the chances are, by making a slight discount on that stove after it was repaired and cleaned up, he would get out at least whole; and even if he did not get out whole that in the long run it would pay.

Mr. Prichard—In line with the suggestion in the paper I move that the President appoint a committee to look this matter up in the manner outlined by Mr. Humphreys so we may have the benefit of the knowledge contributed by the members.

Mr. Leach—I second that motion with a great deal of pleasure. I think it is a very important matter and should receive the attention suggested by Mr. Hmphreys.

The motion having been put and adopted, the President appointed Messrs. C. J. R. Humphreys (Chairman), Wm. McGregor and C. F. Prichard as such Committee. The discussion was then resumed.

Mr. Fowler—Mr. President, you spoke of the Boston Company sending out stoves. Would it be a proper thing to inquire how the charge of losses is made; whether that is put into capital or into the year's expenses?

The President—Well, I cannot answer that, as I have not charge of

the financial end of the Company, but I should answer from general knowledge that any losses would be charged to expense. Remember, we formerly put out stoves free of charge. We have a great many of those out, and of course they are charged to capital. But if we should sell a stove any loss made on the stove setting would certainly have to be charged to expense.

Mr. Fowler—And to expense for the year during which the loss was incurred ; that is, it is not capitalized from year to year, it is not carried on from year to year ?

The President—We have only been selling the stoves for 6 or 8 months, but I presume that would be a mere question of the financial condition of the Company. It might be charged, as suggested by Mr. Humphreys, to expense account, and then charged off as the Company could afford it. In other words, I think it is well to make a special push for business at one time, so as to advertise it thoroughly, rather than fritter away your strength by extending it over a series of years. I agree with Mr. Humphreys in that respect.

On motion of Mr. Allyn, seconded by Col. Richardson, a hearty vote of thanks was tendered to Mr. Humphreys for his paper.

The Association then listened to the following

REPORT OF COMMITTEE ON PRESIDENT'S ADDRESS.

The Committee to whom was referred the Address of the President desire to report as follows :

That they commend the address to the members, and suggest that each one read it over carefully in the quiet of his own home. Statements are made and ideas advanced that are worthy of thoughtful consideration and investigation. The high pressure burners, and the use of gas engines for producing electricity in isolated plants, are, among other subjects treated in the address, so important that we believe each member can afford to give to them time and thought. One subject, however—and that is the printing in pamphlet or book form of the proceedings of our Association from its organization to the present time—we desire to commend to the especial attention of the Association ; and in view of the importance of the subject we recommend that the publication of the "Proceedings" of the meetings previous to this one be left with the Directors with power to act.

We also recommend that the Secretary be authorized to print the "Proceedings" of this meeting and distribute same among the members at the earliest possible day. In this way the work will be commenced, and we hope will result in the publication of the "Proceedings" of the previous meetings. Respectfully submitted,

CHARLES H. NETTLETON,
HORACE A. ALLYN,
FREDERICK H. SHELTON, } Committee.

Mr. Nettleton—Mr. President, in addition to this I would like to say that this matter of printing the proceedings has come up time and again in the past history of the Association, and every time it has been put off for want of means. It would seem as if the Association had now become so large, and so much interest is felt in it and its meetings, and the papers are so good and the proceedings of so much value, that we ought to have them in condensed form, the same as we would in a pamphlet or a book, instead of being obliged to look through the various issues of the AMERICAN GAS LIGHT JOURNAL. It was with this in mind that the committee, after careful consideration, have made the recommendations that they have.

Mr. W. A. Wood moved that the report of the committee be accepted and that the recommendations contained therein be adopted. The motion was seconded by Mr. Walton Clark.

Mr. Shelton—I want to emphasize the position taken by Mr. Nettleton on this point. It seems to me that this Association is old enough, dignified enough, and of enough weight in the gas world to have its proceedings and literature put on record to as great an extent as the other Associations in this country. Some of the best papers that have ever been presented in the United States have been given on the floor of this Association, and constantly I have found (in trying to look up back papers of the New England Association), a heap of trouble from inability to get hold of a convenient book of reference. It seems to me that if the work were spread over a time (it would be a very considerable expense to print the records of 30 years all at once) that is, undertaken on a systematic plan, by which one or two back years per year were printed and issued concurrently with the current year's volume, the expense would be entirely within the ability of the Association to handle. I believe the work would be sufficiently appreciated by the membership at large to make the members perhaps volunteer to pay a special subscription for that particular purpose. If the Directors should first ascertain the probable cost, the probable time which this extra subscription would have to carry, and make the matter somewhat definite, a circular recommendation might be made, which would be left within their power to act and would avoid any change of the by-laws as to the question of annual dues or anything of that sort. At the same time that suggestion is another plan by which it might be covered. I think that the dues per year in this Association are the lowest of any Association in the country, and it seems to me entirely feasible to add a dollar or two a year without being a particular tax on 90 per cent. of the membership, and it would give the Association funds in that direction by which it could broaden the scope of its work and its records.

Mr. F. C. Sherman—As I understand it, we have money enough in the bank to publish these proceedings, and I don't know of any better use to which it can be devoted.

Mr. Wood—I understood that the recommendation of the committee left the matter to our Directors with power. It seems to me they are fully competent to treat the question from the financial and all other sides. I call for the question.

Mr. Allyn—As a member of the committee, I may say we deemed it rather important that perhaps the Association should debate the question a little whether or not the time has not arrived to increase our dues. The dues at present ($3) are lower, I think, than those of any other Association, and I think there is hardly a member who would be unwilling to have the dues increased to $4 or $5, which would give us a sufficient income to meet these little additional expenses which seem to crop out occasionally. I would certainly, before the question is put to the Association, like to hear a more full expression on the part of the members whether they would consider it advisable at this time to increase the dues.

The President—If you will pardon me for expressing myself on this subject, I think the report of the "Proceedings" should be limited strictly to the "Proceedings," the index, papers and discussions of the "Proceedings." I had yesterday copies of the "Proceedings" for 1881 and 1882, but there was no index. I think an index ought to be added. But I think it ought to be limited to that and that only. Now, I agree with really the originator of this, Mr. Wood, that the matter of publishing the "Proceedings" in the past should be left to the judgment of your Directors. I also do not think that subscriptions for this should be called for by the members. I would like to hear some further discussion, gentlemen.

Mr. Prichard—Mr. President, I want to agree with you on that matter. It does not seem to me necessary to increase the annual dues. We have, if I remember rightly, a permanent fund of some $600 or thereabouts, which originally was $1,000, and which we succeeded in whittling away by the means of a few lectures. I don't know of any better purpose to which that fund can be applied than the distribution of copies of the past proceedings of this Association among the new members who have not had access to them. I also notice that, in contrast to some 8 or 9 years ago, when the Association was somethin like $100 in debt at the beginning of each session, we have now on hand, I think, something like $400 in cash, which goes to show that we are going ahead all the time. Now, if we are $400 ahead there and $600 ahead in our permanent fund it does not seem to me it is at all necessary to increase the dues. Personally a great many of us probably would not object to a slight increase in the dues, yet I think there are undoubtedly a class of members here who might feel it perhaps a little burden ; at any rate, they might much rather have the dues kept as they are than increased a couple of dollars. We all know how hard it is to get the smaller gas companies into the Association, and I feel about that as I do about gas stoves, that I would much rather give them the gas stove, or the annual dues, than not to have them here. We don't want to throw any obstacle in the way. Let us sell our gas stoves at cost, if we cannot sell them at that let us give them away.

Mr. Neal—Does this vote contemplate the printing in book form of the records back to the commencement, 30 years ago ?

The President—No, sir. The report, as I understand it, is to print this year's "Proceedings," and that the matter of printing previous years' "Proceedings" shall be referred to the Directors with power to act.

Mr. Neal—I have the records of the first meeting that was held, the 2d day of February, 1871. I held the position of Secretary for several years. The record was not kept as it is now. We did not have a shorthand reporter, but I kept the record as well as I could myself. In 187[illegible] after the AMERICAN GAS LIGHT JOURNAL began to be circulated, I had the proceedings as they were printed in the JOURNAL put together, and I lined the columns. There is other matter here, but I drew lines in the columns where any record was made of the proceedings of o[illegible]

Association. That went on for some years. Then Mr. A. B. Slater, of Providence, was kind enough to take shorthand reports of the proceedings of the meetings, and they were more fully recorded. After a while we, as you know, employed a shorthand reporter to take down everything that was done and everything that was said. I have been appointed by you, Mr. President, one of a committee to write some resolutions relating to Mr. Hill, and I have got to look over this very carefully to find out about him. In this first record that I put in this column, taken from the printed reports of the meeting, I find Mr. Hill's name is mentioned quite a number of times, but I have got to look at this record very carefully to ascertain what his connection was and how long with the Association. I am not in favor of increasing the dues unless it is absolutely necessary.

The President—It is understood of course by everyone that the President in his recommendation suggested that the files of the AMERICAN GAS LIGHT JOURNAL be used as the copy to print proceedings, because in that way we were enabled to take advantage of the work they had already done. Are you ready for the question?

The President then put the motion of Mr. Wood, which was adopted.

A TELEGRAM OF CONDOLENCE.

On motion, a telegram expressive of the sympathy of the Association to Mr. A. C. Humphreys, over the great sorrow that had befallen him in the tragic death of his sons, was ordered forwarded.

Mr. Frederick H. Shelton, of Philadelphia, Pa., read the following paper on

HOW THEY DO THINGS ON THE OTHER SIDE.

Last summer I had the extreme good fortune to be able to spend a month in Europe. I went for relaxation, with the International Gas Congress and the Paris Exposition as objective points. I am so saturated with gas, however, that I soon found myself poking in an informal way around gas works in foreign countries, to see "How They Do Things on the Other Side."

Without pretending to here give you other than a running description of what I saw, I am yet hopeful that such account may be of interest to you, and possibly helpful by reason of comment or suggestion. For ease of understanding I shall refer to all quantities, figures, etc., in the United States equivalents. Unnecessary and general statistics I shall omit, and I trust any seemingly irrelevant remarks or observations, not of a particularly deep nature, may be regarded as nothing more than jocular pleasantries, to lighten a paper of considerably greater length than first expected.

I visited 7 countries, travelled 3,000 miles outside of the ocean voyages, and saw, successively, as below, 15 gas works, 11 of which were large, 4 of which were small, half city and half private works, and all of which were in the main, I believe, typical and representative. My notes are chiefly relating to plants, the physical features being obvious to the visitor. Matters of policy, efficiencies, and questions outside the works, I often could go but little into, my language abilities being limited to English, and intercourse in French, German, Danish and Dutch being confined to the reciprocal exchange of cards, cigars, and other evidences of mutual distinguished consideration. In addition to the trip itself, I had the further good fortune to go in the company of Mr. McDonald and Mr. Ramsdell. I need not identify them by initials. There is only one McDonald and but one Ramsdell.

The United States gas man upon reaching England usually makes a bee-line for Beckton, the frontispiece plate in "King's Treatise," and all tradition putting it in mind as the biggest plant in the world, and the first thing to see. So, armed with letters of introduction to Mr. George Livesey, the engineer, and to Mr. Thomas Goulden, both of whom we unfortunately missed, we went there first. To fully appreciate the plant, some figures are necessary. London has about 5,000,000 people, and 11 gas companies, of which the 3 chief are The Gas Light and Coke Company, the South Metropolitan and the Commercial. The others are smaller concerns around the edges. The three named, together, put out about 37,350,000,000 cubic feet per year, have about 600,000 customers and 80,000 lamp posts. How are those for figures? They make a 16½ candle power gas and sell at 64, 72 and 80 cents per 1,000. The largest is The Gas Light and Coke Company, doing 23,465,000,000 feet, or about ⅝ of all the business in Great Britain per year, and having 360,000 customers. It has 10 plants, of which the Becton station is the largest. This comprises about 1,000 acres, of which 600 or 700 are occupied, 9 miles below London, on the Thames. The gas made is pumped into the city by ordinary exhausters, through 2 lines of 48 inch main, at from 16 inches to 48 inches pressure. The output in winter of the three named companies is over 200,000,000 per day and of Beckton 50,000,000. This is made in 14 retort houses having 8,404 retorts, about half of which are charged by Foulis's and West's stoking machinery. The plant is operated by from 3,500 to 5,500 men, according to the season. It has 9 holders giving 19,000,000 storage. There is 35,000,000 storage outlying. The stock of coal carried is some 200,000 tons, and of oil about 2,000,000 gallons, for 12 water gas sets that are there. The coal hoisting machinery can discharge 2,000 tons per hour from the steamers at the docks. Upon approaching the plant, the President of the American GasLight Association and I turned into, apparently, an office, only to find it a workman's beer hall. Getting started afresh—not refreshed—and entering the gates, the first impression is the avenue of 9 holders of all types of the past 30 years. Some with cast iron columns, some with rounded or "whaleback" curbs, all with the sheets without breaking joints (as is the English practice), and one noble structure of 8¾ millions capacity of entirely modern type, 174 feet high and 247 feet across, in brick tank. The very largest holder in the world, of the South Metropolitan Company, of six 30-foot lifts, 300 feet in diameter, and holding 12,158,600 feet, I only saw in the distance, over the roof tops. Around the Beckton premises everywhere are railroad tracks. The Company has a private system in its grounds for handling all materials, comprising 60 to 70 miles of rail, 32 locomotives, several hundred cars, and numerous full-fledged block signal towers. The gas machinery throughout the works is so conventional as to call for no special comment. The work is done by multiplying units. The exhausters and meters are surprisingly small. The latter are some of them built in the square, outdoor box form of case, suggesting a mausoleum more than anything else. The purifiers are about 40 feet square, in groups of 8, the houses being of very heavy and expensive construction; the boxes on a middle floor, and the oxide being either raised to an upper, or dropped through into a train of cars on the ground floor, as desired. Among the miscellaneous points noted were four private sewer systems (very necessary with the army of employees), which are worked on the system of converting the waste matter into opposing sets of microbes, which destroy one another, which as Samuel Weller would say, "Is a wery convenient way o' doing." Strikes of the workmen—not the microbes—occur at times, and rather than get in darkness, the London authorities hasten soldiers down to effect order. Barracks for 3,000 men adjoin the works. The boiler plants seemed peculiarly insignificant and cheap. The general appearance of works' order and condition was only tolerable. The retorts were in sets of 9's. A self-sealing lid of the Holman pattern, without catch, caught our attention as very excellent. The yield of coal gas and general operation did not seem to differ materially from what we get here. Mr. Cossey, one of the engineers, conducted us around, and to him we are under obligation for figures, and for the utmost courtesy. Upon leaving, a row of good, old-fashioned New England sunflowers was noticed in a corner of the works—another Anglo American tie.

NAIRN.—It was a large drop from Beckton to our next point, a little gas works in Nairn, away up in the north of Scotland. But our path was there and the contrast amusing. Nairn is a delightful little residential summer resort, quiet, sleepy town, up among the heather hills on the Firth of Forth, with the rugged hills of Cromarty in the distance. Its characteristics seemed to be ozone, scenery and an absence of anything ever happening. Yet in this little place of 5,000, where the stone houses are, many of them, but one story, and with roofs thatched a foot thick, the gas company has 8 or 9 miles of main, 934 customers (of which 220 are slot meters), 300 "cookers" (as they call ranges in England), and puts out nearly 10 million feet yearly. The plant is picturesque and only 80 years old. It has but one 9,000 foot and one 18,000-foot holder, both in the *cast* iron tanks so common in England, two 9 by 9 purifiers, 4 inch and 6 inch connections around the works, no exhauster and no boiler, I think. Using Scotch shale, a 26 candle gas is made and sold at $1.40 for light and $1 for fuel. The chief detail noted was the use of an astonishingly small size of pipe for meter connections; in some cases a lead or composition pipe scarcely more than a ¼-inch bore. This pipe was also frequently noted in Edinboro' and other places, tacked on walls, yards of it, in the weather, feeding outdoor bracket street lamps. Why it doesn't freeze up or stop up, or why so small a pipe should be allowable on *any* meter is beyond me. The genial Manager, Mr. Keillor, had one device, rather clever—an enormous meter index, made with dials a foot in diameter—which he uses for elucidation purposes with customers, or before an awe-inspired school class of bonnie Scotch lads. In Nairn the practice is to collect bills but three times a year, or every 3, 6 and 3 months. It is a little place, but Mr. Keillor deserves a better plant to work with, for it is certainly doing its share in the 156,665,229,000 feet output of the British Isles.

INVERNESS.—It is not very far from Nairn to Inverness, and while awaiting the boat to go through the beautiful Scotch Lakes, we visited the City gas works for an active business center of 25,000 people. The station impressed us as a very typical average plant, the apparatus throughout seeming to have stepped directly from the pages of the text books and advertisements. The 9 benches are semi-regenerative 8's. The hydraulic was wrought iron, well above the bench. The retort house roof was peculiar in having *cast* iron rafters, but most attractive by reason of large glass skylights, letting in lots of light in front of the benches, avoiding chilling draughts and broken glass from wall windows. The annular air condensers were out in the yard, very common practice in the English climate. The Beale exhauster was almost identical with our McKenzie. The purifiers were identical with ours, except that the setting is different. They were simply imbedded in the earth with a pavilion roof over them. Such construction cost is far less than our customary building expense, and the arrangement —if somewhat wind-sheltered—seems simple and attractive. The holders, 140,000 and 375,000 feet, had the usual cast iron tank, in this case imbedded in the ground. Mr. Thomson, the engineer of the plant, reported 75,000,000 sales a year, 3,400 customers, 400 slot meters, 240 "cookers," 26 candle power gas, and price 95 cents per 1,000. A fine chimney stack, 101 feet high, gave draught to the benches and was the pride of the works. They are, as they say over there, very "keen" on stacks, instead of individual chimneys for each bench, as we usually build here. The result is that in approaching an English city one quickly learns to locate the gas works by the tall chimney rather than by the usual gasholders, the chief feature in our landscapes.

PARIS.—The fourth works visited was the Clichy station, the larger of the two plants that I believe supply Paris. The works is a plain, old, large coal gas plant, pure and simple, on first thought surprisingly old and plain, when the size of the city it supplies (2½ million) is remembered. It seems, however, that the whole plant is liable to revert to the city in a few years; if this is so, it is not surprising that no money is expended in new or modern equipment. Yet, as in every works, there are several points of interest. The gas exhausters are of the reciprocating piston type, instead of the rotary form universally used with us. And whatever may be said against the Paris plant, the exhauster room must be excepted. Never have I seen an engine room, in absolute quietness and smoothness of action, surpassing the Paris room, in spite of 6 engines and exhausters, and numerous connecting, moving parts. But the purifiers! 128 *boxes*, 8 by 12 each, in rows and battalions, taking 4 houses of 32 each, was someone's idea, once upon a time, of how to arrange things. They look like the unremoved product of a brick making machine! The gas holders are of interest, the columns being neither round, cast, nor built up lattice-pattern, but of plate girder form, uncommon with us. The connections, too, instead of being underground, as with us, were of the flexible, articulated, light wrought iron, external style, connecting the crown of the holder with a steam pipe near by, a very common form in France. The retort houses contained benches of 8's, back to back, but not through, with Siemen's furnaces and wrought mains. The characteristic of the retort house is the peculiar effect of the workmen wearing their shirts with the tails out, the French blouse seeming very undressed. No stoking machinery is used. The tools when not in use are hung in front of and in line with the retorts on overhead racks and hooks, not left in the way on the floor. The arrangement is simple and excellent. They are very proud of an elaborate conveyor and machinery outfit at the Paris works for handling, measuring, weighing, storing, bagging, etc., coke. An illustrated paper describing, it was read at the Gas Congress. It seems to me, though, overdone. I know that while 2 or 3 men were waiting for a *lifting* machine to slowly raise bags of coke shoulder high, so that they could get underneath them easily, a "gas house tarrier" in the States would in the meanwhile have had his bag half way to where it was wanted, and the men around the apparatus seemed twice as many as in our works. This may have been due to political reasons. The Paris Gas Company goes in somewhat for appliances in the city show offices, but its price of $1.70 would, seemingly, hinder fuel business. The arrangements for showing the Convention through the plant were exceptionally good, a guide being provided for every 20 visitors, and a brief printed description of the plant and its figures being handed to all.

ZURICH.—What a contrast, however, is the plant at Znrich. After leaving the city, where its sights, the Exposition and the Gas Congress, successfully conspired against any reasonable degree of sleep, we went to this chief city in Switzerland, because everyone said it had the finest existing gas plant in the world; that we surely must see. More than glad were we that we did. The plant is a city works. Zurich lately decided for a new plant. Two years ago this was finished. Gossip says the city paid two prices for it. Perhaps it did, but it surely got "A plant that is a plant." It is not lavish in marble or show, but it is in space, provision for all features, for growth, and in engineering efficiency. Representing the highest type of the German school of gas engineering, it has set a new standard for such works. To describe it adequately here is impossible. To all those interested I would say, get a 28-page book, with 2 plates and 43 illustrations describing it, just published in English, by the English *Journal of Gas Lighting*, price 60 cents, plus postage. I can only here briefly say that in the Zurich works coal is not handled by hand at all. Dropped from the cars, it is first crushed to uniform size, then elevated, stored, fed to retort house bins, charged into and converted to coke in inclined retorts, withdrawn and conveyed to the wagons, or storage bins, all by either machinery or gravity. The retorts number 288, in 4 stacks of 8 benches of 9's each, in a house 500 feet long. The gas, steam, drain, water and pressure pipes pass from house to house in underground conduits. The purifier house, in use two years, looks as clean as when but two weeks from the contractor. The workmen have a house with toilet rooms, lockers, recreation rooms, and even a hospital room, with operating table, in case of accident. An electric building houses a plant sufficient for a small town, though used only to light the gas premises. Floors are tiled. Scales on the holder tanks are not painted, but of enamel on steel, weatherproof. An enormous central, iron open-shed houses all yard stuff. Not a thing is permitted to lie around indoors or out. Characteristic of Switzerland is a 4-faced clock in a stone tower, that chimes the quarter hours. The laboratory, pump house, blacksmith shop, ammonia plant, hot water holder tank heaters, and other parts, all evidence completeness of design. Everything for a purpose and everything figured to exact size and balance is most evident, and a tour through the plant is a liberal education in gas engineering. The city of Zurich has a population of over 100,000. The gas plant's connections are of 18 inches and 24 inches size, and its rated daily capacity about 2,000,000 feet, which can be doubled in the future. Don't fail to see it if you get within range of it.

DRESDEN.—With a sigh that no works in America had anything to approach the gas works at Zurich, we proceeded to Dresden, Germany, having determined to visit representative works using inclined retorts. We reached that interesting city, after a night on a train wherein they extinguish the Pintsch lanterns by a device that resembles a flannel high hat. The works is municipal. One is first impressed by two large, ornate holder houses of brick, much like the old style of such in large American cities. We were told that an old German law at one time compelled housing holders, it being thought that they were safer that way, confining the effects of a possible explosion. The authorities were poor gas engineers on that point! On the outside of the holder houses we noticed dials with pointers, some 6 feet in diameter, showing the quantity of gas stored, without having to go inside the building, and in fact visible from all over the premises. The works, built first with horizontal retorts 4 years ago put in a stack of inclines, and was just adding its second retorts. This well shows the long life of inclined retorts. The operating figures of such I will give later. The 10 purifiers, in a double row of 5, with valve connections, were rather unusual in the symmetrical row of 30 valves down the center aisle. The oxide arrangements were typical of what seems to be the German plan, versus English and American practice. We elevate our purifiers and dump the oxide below. The Germans put the boxes on the ground level and remove the oxide sideways. Instead of shovelling it into chutes they are more apt to shovel it into a hanging tip-bucket, that runs on a trolley on an overhead continuous and sectional track, like a butcher's meat rail. The buckets are pushed with no appreciable effort, to an adjoining room, the oxide dumped and the buckets refilled and returned around the rail loop to whatever box is being handled. We saw this in Zurich and in several other places. In Dresden a large restaurant was a feature of the plant, where meals are served for a few cents to employees. It seemed strange in a works of such size to note the use of Korting steam jet exhausters instead of the usual piston or rotary form.

BERLIN.—Upon reaching Berlin we found the capital of the German Empire supplied in part by a city works, and in part by the English Imperial Continental Company, private interests operating a number of large works in Vienna, Brussels, Antwerp, etc. We decided to make the works of the latter our visiting point, because of the probable ability to chat in English. Chief Engineer Drory, a veteran gas man, and one of the earliest successful users of inclined retorts, made us most welcome, ably supplemented by two of his assistants. The plant

is rather old and outgrown (they are now building a new 42-inch works), but in its long continued and matter of fact use of inclined retorts is most interesting and convincing. We observed there many evidences of the skilled practical management of a private works, and numerous "wrinkles" in detail. For instance, on all bye passes the stem of the inlet valve is painted black (the metaphor of foulness upon entering apparatus); of the outlet is painted white (significant of purity); and of the middle valve, red (significant of danger, or the valve only to be handled under unusual circumstances). We noted also examples of ornamental station meter heads, that our friends across the water are rather given to, scallops and sunbursts and flowers being cast in the pattern in a way that McDonald never does in Albany. In Dresden the meters had Imperial lions and the Royal arms on the fronts. Large street main float governors of the water type were in evidence in this as in other works. Nowhere did we see a compact mercury form to compare with the Connelly as used here.

COPENHAGEN.—Tempted by the allurements of a trip by the Vulcan Ship Yards, at Stettin, where the great German transatlantic liners are built, by a cozy coastwise steamer on the Baltic, we cut short our stay in Berlin to tuck in a day at Copenhagen. This city of 400,000 is supplied by two works; the old section by the City, the newer part by the Danish Gas Company, also a parent Company, running some 10 works in Denmark and 2 in Germany. Mr. F. D. Marshall, of exceptional ability, enterprise and personal attractiveness, and the General Manager, put us under more than ordinary obligations in courtesies extended His works, built in 7 months, in 1895 (the most practical and efficient that we visited, as regards capital outlay—and symmetrical and sightly), are essentially of the English type in apparatus and design, excepting as to the abandonment of horizontal retorts. None of such for him. His second installation of "slopers" had been completed for about a year, and substantially inclosed in a high, white painted, roomy and airy building. His inclined retort setting for practicability is the best of all we saw, and as clean as our best water gas houses. His design is even better than Zurich in one point, to my mind. At the latter place the overhead coal charging bins, above the inclined retorts, are continuous and very expensive. They cut off much light and ventilation. Mr. Marshall makes his bin, say, but a third the length of his stack of benches and avoids a roof conveyor, saving in expense and gaining in cleanliness and ventilation. It is no trouble to keep it full by vertical conveyor, and the pendant charging buckets underneath, after being filled, are readily pushed hanging from an overhead rail to the particular retort, but a few feet away, that it is desired to charge. The coal storage bins are of trough and inverted pyramid form, constructed on the highly commended Monier system of wire and rods imbedded in cement walls. In the Copenhagen works we saw an anti-naphthaline device, that I at least have never observed in the United States. It is a "sight-feed" so regulated as to put a certain number of drops per hour of methylated spirits into the gas flowing out of the works, the idea being that during the periods of the year when naphthaline troubles are likely, impregnating the gas at the start from the works will make them least likely to materialize. The apparatus is very simple, the liquid being vaporized by a steam coil and is almost automatic in action. We also noticed similar arrangements for feeding benzol to the gas to increase candle power, a common plan of procedure on the Continent, where the coals seem to give rather lower candle powers than we are accustomed to. The wooden shoes or sabots of the workmen, and many rabbits around the yard, kept by the workmen, were local characteristics. The most impressive feature at Copenhagen, however, was the statement that 75 per cent. of the Company's output is sold for purposes other than light. There is a fuel gas mark for you! Their price is 86 cents for light, 74 cents for fuel, or the option of 80 cents flat by single meter. Station meters with the flanges *internal* were a bit of odd construction noted.

ALTONA.—Returning during the night, getting on the wrong boat, which would have landed us Heaven knows where, and from which we frantically scuttled ashore just as the hawsers were being cast off, we arrived early next morning in Germany again, at the works of the Altona Company, supplying a portion practically of Hamburg. Here we had a good illustration of red tape and discipline. Although driving up in state, with our best manners, most engaging smiles, and pockets full of credentials, the engineers at the works dared not let us in without the sanction of the Director General. After a vast amount of parleying and telephoning and driving back and forth to the city office, we finally found that gentleman, who proved courteous to a degree and personally showed us through the plant. Unfortunately, by that time our train arrangements gave us but 20 minutes, and the rate at which we went through the works will probably remain a record and a local tradition for many a day. However, we saw the plant, and a particularly large and commodious works it is. Its feature is the extensive use of hydraulic power. For instance, the box covers, about 24 feet by 27 feet, are mounted each in the center on a vertical hydraulic piston shaft. To raise the cover a lever is pulled and the lid is pushed up 8 or 10 feet, remaining in the air like a huge umbrella, while the box is being cleaned. This hydraulic power of 750 pounds to the inch is also used to operate an elevator that raises and lowers railroad cars bodily between the works' entrance high level and the general lower yard level, in which the tracks symmetrically radiate from a central turntable. A Gadd & Mason, spiral-guided, columnless holder was noted. The inclined retorts there had been in use some four years.

CASSEL.—The next day found us in Cassel, a German city of 100,000 population, but of no interest to the tourist excepting for a King's Palace near by. That we should prefer to go to the gas works undermined the hotel porter's idea of the fitness of things, most sadly. Reaching the works (also a city plant), by the most up-to-date American trolley line that we saw, and which contrasted curiously with the narrow, picturesque German streets, we found a warm welcome by Herr Mertz, the Director, a typical coal gas works, and inclined retorts. In this works we noticed an electric plant, run by gas engines, for lighting the works; and a briquette machine, occupying such a small space, and being so simple in its operation of turning out fuel bricks from tar and breeze compressed, that we wondered why we do not do more of that sort of thing on this side. We also noticed an excellent purifier house, the feature of which was the center-seal in an isolated, sealed off annex, on one side of the building. The feature that has most remained in mind, however, was a marvelous locomotive without firebox, with a boiler of 3 cubic meters or about 108 feet capacity (so well insulated that it was practically cold to the hand), that gets a charge of high pressure steam in the morning, at say 80 or 100 pounds, and then works on that charge all day, shifting cars or standing around as the case may be, without recharging. We expressed surprise at this and asked Herr Mertz about it again in about 4 different ways, as to the fact, but he seemingly understood the question and stuck to it that that's what the fireless locomotive does.

ROTTERDAM.—From Cassel we journeyed to Rotterdam, via Cologne, without incident, excepting the most remarkable fact of the best hotel in the latter city, chasing a porter after us to the train, to collect 12 cents, the price of 2 boiled eggs, that had been left off the bill. I imagine Young's or the Touraine doing that? The Rotterdam works, a private plant, are essentially "early English," very conventional, and of far less interest to us than the city itself. The benches are horizontals, old and inefficient. Inclined retorts are about to go in, to replace them. The 18 purifiers (about 24 feet square each) were reminiscent almost of Paris, and the wheelbarrow arrangement for oxide as crude as could be; yet burlap curtains tacked on the boards that are laid over the cups—while filling—to keep the paint clean on the sides, was a clever thought. The most elaborate feature, and one that caught McDonald's eye, was the pretentious meter room. The two 12-foot Parkinson meters had most ornate case fronts, and were mounted on heavy bases of beautifully polished red Scotch granite, which bases were surrounded by mosaic flooring and tile wainscoting. This meter room, and the enormous Dutch wind-mills near by—operating by a power unassailable by gas engines—linger well in our memories, together with the courtesy of Mr. Sisson, Assistant Director, and his bright young Dutch assistant.

THE HAGUE.—In Holland's capital, we visited the city gas works and found the chief point of interest to be the fact that, after using horizontal retorts and the best stoking machinery, and comparing such working with a stack of "slopers" alongside and under identical conditions, the management has elected for the inclines hereafter. The general plant is rather cut up, built piecemeal and entirely conventional. In the meter room we noticed one of the station meters frequently seen on the Continent, wherein the usual index of a string of dials is replaced by mechanism similar to the counting machines that we often see on pumping plants, to tally the strokes. That is, a straight row of figures in a box, that change one by one, and of which no figures show but the exact ones for the current meter reading. A large plan of the works under glass, showing all pipe, connections, valves, etc., in the exhauster room for the guidance of the workmen, was a very practical feature.

AMSTERDAM.—In this city, where the plumbers' signs read "Steam, water, gas and beer piping done here," we visited the large and architecturally, unusually fine plant, lately sold by the Imperial Continental Association to the city, built 17 years ago. It also is conventionally

English, has no stoking machinery, no conveyors, and in but few ways is comparable with the modern plants, either English or German. A point striking us amiss was that, though surrounded by canals, the works yet provided no way to get coal by water. In common with all such plants it has a considerable ammonia department. In addition I saw for the first time the commercial saving and working up of cyanide. After the gas has been condensed, washed and scrubbed, and before it enters the purifiers, it passes through, practically, a second rotary scrubber of the well known standard washer type, which, instead of being operated with water, as it would be, to absorb ammonia, is operated with such a liquid as will chemically absorb the cyanide base. The resulting liquor is later treated and distilled, and the cyanide product precipitated and collected in crystals on long strings. It looks exactly like yellow "rock candy." It is shipped, broken, in barrels, to London, for the South African gold mining market, and brings about 15 cents per pound. The process seemed fairly simple and easy for a works of size maintaining a chemist. Amsterdam is about to contract for what was stated would be the largest holder on the Continent—some 5,000,000 capacity, in steel tank, and this tank is to be built hollow, and to be used as a store room; something that has been done in a few instances abroad. That is, the bottom of the steel tank, instead of being flat is to be dome shaped, rising almost to the water level, yet giving around the sides the full water legs and depth. Lit by electricity inside and with a depressed entrance, the claim is that such storage room so secured costs no more than a building would built elsewhere, and much ground space is saved. In all the Holland plants visited, where the streets are below sea level in the old sea bed protected by dykes, the street mains are laid on piles, one to a length under each bell, to prevent indefinite settling.

Ostend.—Tiring of seeing mostly large works, I made a detour, resolving to visit Ostend (a watering place on the English channel), Belgium, of some 30,000 to 40,000. I must confess that I did not see much. The plant is old, of poor design, illy kept up, and has no features other than 4 benches of 11's in each arch, the largest number I have personally seen. Making from 250,000 to 500,000 cubic feet per day, they yet felt it would pay to have—and they had—a conveyor system for removing coke. A very odd bit was 2 steel holder tanks in which the top rows each only of plates were of cast iron. The proverbial politeness of the French (and Belgium is, essentially, French), was illustrated by a stray complaint postal card that I chanced to pick up, in which Monsieur, a consumer, requested the Director to send to him on Thursday morning a workman to remedy an escape of gas. He closed with his "distinguised salutation." How many of our customers are as polite when complaining about a gas leak?

Salisbury.—The last, and the 15th, works visited was back in our first love, England, in that beautiful old English town of Cathedrals, and second-hand and antique shops, where they trap the unwary American dollar, and of Mr. N. H. Humphrys, who writes the English letters to the American Gas Light Journal, and in whose courtesies I am a debtor. Salisbury is a place of 18,000. The gas works, barring minor details, is practically what we find in our own country for coal gas plants of similar size, excepting expected differences in details and construction, and a device not seen before, by which if a workman should, inadvertently, in changing valves, shut off the town, live gas from the inlet to the holders is automaticaliy switched into the mains. The feature that impressed me most though at Salisbury is the amount of business they do. With 18 or 19 miles of mains, they have 500 city lamps, 2,000 meters, 650 cookers, and sell 100,000,000 feet per year, or 50,000 feet per meter. Mind you, the town is under 20,000. The candle power is 16. The price 84 cents. Slot meters, about 150. The output at large in England runs 2 and 3 times ours.

Salisbury is an excellent instance of it. I attribute it to these several reasons. The gas companies are protected from competition by Parliamentary Act. They quit unnecessary opposition companies 25 years ago over there. We are still in that stage. Therefore, they can reach selling prices that we cannot. English companies, moreover, have been in business 40 and 80 years, where our companies are but 20 and 40 years old. Hence by this time the English companies, in business twice as long, have their towns practically completely piped, and their customers far more educated to the many uses of gas. The resulting volume of sales facilitates lowering of prices, and this in turn enables gas to be freely used in heaters as well as cookers; and the English climate is more amenable to an impression being made on it by gas heaters than is ours. In brief I do not believe that other than protection and long years at it are the reasons for the larger English sales. It is not cheaper coal and labor. Such are not cheaper. Their operating costs seem to me cheaper only in so far as the benefit extends of larger quantity made.

Let me now summarize what I saw in inclined retorts on the Continent. The universal setting was in 9's. The firing generators were both internal and external. The earlier length of retort of about 12 feet has been almost uniformly changed to 15 or 16 feet as the right length; that is, in Germany where the development is highest and a settled standard has, seemingly, been reached. The general time of charge is 5 per day, or 4¾ hours per charge. The charges in weight run 650 to 700 pounds of coal. The yield per pound is about the same as in horizontals. Per 15½ feet retort in Berlin it was about 14,400 to 14,750 feet per day, or 130,000 per bench of 9's. All of the fuel being taken in by conveyors, and the coke taken out mostly by machinery, the retort house labor runs from four fifths of a man to one man per bench of 9's per shift. Drawing and recharging averaged from 2½ to 3 minutes per retort. The carbonization generally was perfect. I can say no more; the charges were practically, universally, completely burned off, and the coke ran out as freely as the promoters claim for it. The life of the retorts is about 4 years or 1,500 days. We found the above facts beyond reasonable doubt; we saw inclined retorts in great numbers, in Zurich, Dresden, Berlin, Copenhagen, Hamburg, Cassel and The Hague, 7 places in 4 countries, and the universal verdict was the same, viz.: That they were the only thing to use. Half of the places were laying down, as they say, additional installations; all after comparing with horizontals, several after 4 years' trial of the first equipments, and one after side-by-side test with stoking machinery. Zurich, the finest plant in the world, is entirely inclines. So is the Imperial Continental's new Berlin 42 inch works.

After such evidence there is no possible doubt left in my mind as to the satisfactory working of "slopers," or as to their being the coming apparatus for works of considerable size. In this country there is practically nothing as yet in inclined retorts. Two plants only have just been started. They will grow fast though, I believe. England is doing something in them, having numerous installations and a strong faction advocating them and trying to agree on details. Germany has made up its mind both as to what it wants and how to build it and is far in advance on the question. I saw no gas works in France except in Paris, and conversed with but few French engineers and can therefore express no opinion as to the status of the French on the question.

Outside of inclined retorts, and speaking entirely in a general way, there is no material difference in the best American versus the best foreign gas practice. Benches, stoking machinery, condensers, scrubbers and washers are practically identical. On the Continent, however, the P. & A. condenser is used to a much greater extent than with us. The McKenzie and Beale exhausters are almost identical. I saw, however, no exhauster of the 2-blade Root type, although I presume they can be found. Purifiers are identical, excepting as to locations. We invariably house and usually shift oxide up and down to different levels; the English work on the 2 stage plan also, in most new work, but often go out of doors. The Germans house, but shift oxide sideways, as stated. Station meters in the main are identical, except as to ornateness. In gasholders England leads us in size and in the breaking away from tradition; some 75 of the Pease, wire rope guided, and a number I believe of the Gadd & Mason spiral guided, columnless holders having been constructed. The 6-lift 12 million holder already mentioned is also on plans by which the two top sections, when inflated, rise entirely clear of the framing. Distribution practice, mains and details are almost identical. I saw no sign of high pressure workings on the lines that I have recently inaugurated, but such plan of operating was viewed with, I think, more than passing interest in view of its potential possibilities. Consumers' meters are of the universal type, but a very heavy proportion of wet meters is still used in England. Prepayment meters are a staple and in use in great numbers. Labor questions trouble our English friends far more than here. The general plan is 8-hour shifts. The pay at Beckton is $1.38, equal to $2.07 for our 12-hour shifts. The stokers, machinists, brick masons and endless other unions have always to be reckoned with. The superintendents generally seem to get distinctly less pay than with us. Free rent, coke, light and taxes often are included, however, and with cheaper costs of living in some respects, the difference may be more apparent than real. The superintendent is frequently, however, required to live and bring up his family at the works, and my general thought is that the superintendents in America average better pay and greater freedom. Boards of Directors, who are at times a hindrance, and the cumbersome efforts of public authorities seem to bother the earnest manager there as much

as here. While I do not rank English talent higher than that here, there are undoubtedly numerically many more thorough and skilled gas engineers there than here. The general average of cleanliness, fresh paint and condition, I am sorry to say, in England seemed to outrank ours.

England seems far freer from the "patent process" promoters than here. The higher price of oil probably hinders turning out new schemes so often based on a new form of oil distilling apparatus, and the Parliamentary Acts prevent the ready "opposition franchise" plan of floating new gas schemes. Legitimate water gas plants (in which the lead is easily held by our countrymen, Humphreys & Glasgow) seem to be put in more and more every year, not to displace coal gas, but to co-operate with it, for fluctuations of output, labor questions, enriching, convenience, etc. At present the history of the Loomis system (which you will remember was heavily installed in this country 5 to 10 years ago, but which has almost entirely died out since), is apparently over there being repeated by the Delwik-Fleischer, a system of blue, fuel water gas, which a number of iron working establishments have installed, and which the promoters, as usual, claim is the only way in which the regular gas companies should hereafter manufacture. Gas engines are far more used than with us, especially in gas works. We constantly saw them operating coke crushers, conveyors, etc. The English gas cookers as a rule are much heavier, plainer and more expensive than ours. It is claimed by some that the more lasting grade pays, especially if a rental business is conducted to any extent as is often the case. Some of their stoves are enamelled and in colors, to prevent rusting. Readily wiped off with a damp cloth they are very attractive and even ornamental. Gas companies abroad run on low candle powers. The South Metropolitan, of London, I believe has recently been authorized to go from 16 to 14. Welsbach burners are almost universal. The disappearance of open flame is, seemingly, complete, and the use of mantle burners on the Continent particularly, for lamp posts, is very general. Lamp posts proper are more varied and more generally ornamental than here. The Gas Light Journals abroad are better than here. More enterprise and more technical talent are manifest in their productions than in our home papers. A part of the reason probably is a larger field justifying greater expense.

To the International Gas Congress I shall make no special reference. An American report upon it I believe will shortly appear. The English *Journal of Gas Lighting* published an excellent resumé of it, which, re-printed by the AMERICAN GAS LIGHT JOURNAL, can be found in its issue for October 1, 1900, p. 523.

The Congress was much like other gas conventions, but rather larger than our principal American ones. It was seriously handicapped by the mixture of languages. A man would read a paper in one language and a delegate afterwards would talk vigorously about it in another, while the author, wondering whether his argument was being attacked or commended, was quite unable to either grasp or answer the comments made. Distinguished presidents, secretaries and officials were so thick as to be common, and there was a vast amount of mutual admiration and felicitation by the honorables, of whom 20 or 30 were always on the platform, looking their most distinguished. The occasion as a whole was most enjoyable. The French Society were admirable hosts, and no delegate failed to appreciate or will ever forget the courtesies extended. The papers presented, as a rule, were of exceptional character in reflecting the present state of the art, and will well repay a systematic reading in the translations.

In conclusion, let me here again express my thanks for the continued courtesies extended throughout by many new friends met and made on the common platform of love of our profession, irrespective of the side of the Atlantic we chance to be. And to any of you who get an opportunity to visit foreign works let me say to you, do so; for every minute will be of the keenest interest.

Discussion.

The President—Gentlemen, if I thought it comported with the dignity of the President of the Association, I would say that that was a "bully" paper. It is before you open for discussion. Will Mr. Ramsdell tell us something of what he saw while on the other side?

Mr. Ramsdell—I don't think I can add anything. The paper is exceedingly able and complete, and it seemed like a panorama as I sat here and heard it. Mr. Shelton has covered all the ground. I would have to get my notebook to find any spot that he missed. I indorse the paper very fully, although on one point I think I differ with Mr. Shelton. He is a little more enthusiastic on the incline question than I am. I came back here, perhaps fully as enthusiastic as he, I have done a good deal of figuring since then and believe that I have changed my opinion somewhat, owing to the greater expense of installation. I am not prepared to talk positively on this, for I have not brought any figures with me, not knowing that this was coming up; but I must say I have weakened a little. I don't say that I am entirely transposed or anything of that kind. I fully agree with Mr. Shelton that there is no question whatever but that the inclines work satisfactorily. But you will notice, even in the figures Mr. Shelton quoted there, that in a 16-foot retort they were not getting as much gas proportionately per foot of retort as they would in a horizontal retort of 9 feet, and the same is true in other directions. It is purely a question of cost and of local conditions. Certain works in my judgment will be better equipped for inclines than for anything else; but, on the whole, Mr. Shelton has certainly done the honors of the occasion in very fine shape.

The Secretary—I would like to ask one question. Perhaps it was covered, but, as usual, I was not attending to business. It relates to the ground space. In your figures did you take that into consideration, as adding to the desirability of the inclines, for instance, where room is scarce?

The President—Excuse me. I desire to call the Secretary to order. The subject before us is the general paper, and we are going to discuss that just a few minutes. If the Secretary will wait those matters may be brought out in the discussion on another paper that we are to have shortly. I think Mr. McDonald was also in Europe. Why have we not heard anything from him?

Mr. McDonald—I have listened with a great deal of pleasure to Mr. Shelton's paper. I think, however, that a great deal of the credit for the knowledge that Mr. Shelton and Mr. Ramsdell have on the subject of gas works and inclined retorts is due to my action while in Europe. (Laughter and applause). I cannot attempt to add to the fund of information that they have produced here to day. With yourselves, I acknowledge it is great. The only thing that I don't vouch for, and which I did not see, was the engine that went without fire. My particular province while these gentlemen were in Europe was to prepare them for their work, and to take care of them after they were through with it; and I don't think they can say I ever failed to have something for them to eat when they were tired or to drink when they were exhausted. Therefore, I feel that I am entitled to a great deal of credit for having produced here to-day such a paper as this is on the gas works of Europe. (Laughter.)

Mr. Shelton—Any figures that may be wrong I will therefore say were entirely the result of Mr. McDonald.

Mr. McDonald—I would, however, as a gas man, like to add my word to what has been said about inclined retorts. I was greatly impressed with them. I saw a great deal of them and became fully impressed with the fact that they were the coming thing; at least as far as the Germans are concerned they have made up their minds. Knowing what they wanted, as Mr. Shelton says, they are going ahead with inclined retorts without any more talk about it. Since reaching home I have had the pleasure of seeing the operation of the inclined retorts in the works of the Louisville (Ky.) Company. I think I said to 1 or 2 gentlemen here that I thought they worked better than any I had seen in Europe. They certainly work beautifully. No attempt was made at machinery to handle the coke, but the coal was handled in the usual way, with the use of a pocket, as we saw in many places in Europe, and very successfully. I think it is worth while for the gentlemen to look up the matter of inclined retorts for large works.

The President—In announcing the close of the discu sion on Mr. Shelton's paper let me say it was a very happy sequence that his paper followed Mr. Humphreys'. Mr. Shelton, I will not move a vote of thanks to you. Everyone's face, and laughter brought forth, show you how much they appreciated it.

Mr. Shelton—The laughter may be a questionable compliment.

The President—Well, it was reminiscent to some extent, as well as the serious part, so I think you ought to be gratified with that portion of it.

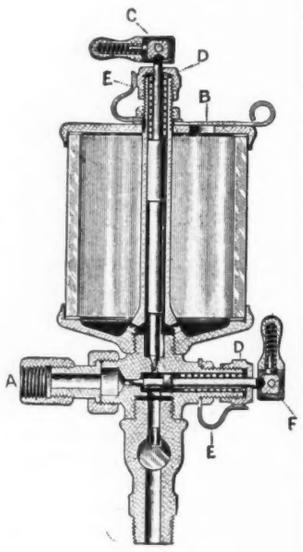
Mr. Shelton—Thank you, gentlemen.

[To be Concluded.]

MR. WILLIAM I. BATTIN, formerly Superintendent of the Sheboygan National Gas Company, of Sheboygan, Wis., has been appointed Superintendent of the South Station, 25th and Loomis streets, of the Peoples Gas Light and Coke Company, of Chicago.

An Oil-Cup for Pressure Oiling Systems.

A notable advance in systems of oiling machinery made in recent years is the introduction of positive pressure systems of lubrication through which the oil is distributed to the different bearings by lines of piping kept under pressure by a slow moving pump. The accompanying illustration shows a lubricating cup designed especially for use in connection with such systems which has been recently brought out by the Lunkenheimer Co., of Cincinnati, O.



It will be apparent that in any pressure lubricating system it is important that the attendant shall be able to know whether the oil is feeding properly to any particular bearing. It is also often convenient to supplement the supply of oil from the pressure system, for the small pipes sometimes become clogged, and lubrication should continue nevertheless without chance of a shut down.

In the cup, of which a sectional view is shown herewith, a sight-feed chamber is located in the base, so that the rate at which the oil is dropping is under the eye of the attendant. The oil supply from the pressure reservoir is piped through the union *A*, and the flow is controlled by a needle-valve operated by the lever *F*. When this is turned down the oil is shut off, so it can be known at a glance whether the valve is open or closed. The auxiliary supply of oil is contained in a glass reservoir, and is not under pressure at all. This auxiliary supply is designed for use in case the pressure supply should be interrupted, and is regulated by the lever *C* in the same manner as the pressure supply. The spring *E* holds the regulating valve in any position in which it may be adjusted, so that it cannot be altered by the jarring of machinery.

Switchboard Connections for Standardizing Ammeters.

Mr. Theodore W. Frect, Jr., says that in years gone by the accuracy of switchboard instruments was given little if any attention, owing probably to the fact that the instruments of the past were unreliable at the best. As the development of electrical measuring apparatus has gradually been brought to its present stage, so the requirements of the station management have become more rigid. At present the user who was formerly satisfied to regulate the e.m.f. of his plant with a worn-out incandescent lamp and the distribution of current on his several dynamos according to the apparent load on engines, spends a great deal of time wondering whether the accuracy of his voltmeters and ammeters are strictly within the guarantee of the manufacturer, and in many instances unjustly condemns his instrument through some little irregularity which he thinks he has discovered. And yet with these requirements, which are so essential in determining the efficiency of the plant and maintaining it, the switchboard designers do not seem to have taken any steps to provide for the convenience of occasionally checking the ammeters.

This could easily be done by providing a break in the circuit of each machine which, under ordinary conditions, could be closed with a suitable movable connection. When a check is desired, this connecting bar could be replaced with a shunt similar to the one used with the dynamo ammeter. If the dynamos were of different capacity, as is often the case, the station superintendent could have a number of shunts to correspond with the different ranges of his ammeters. All of these shunts could readily be adjusted to one instrument, and would prove sufficiently portable to be sent to a standardizing laboratory occasionally for correction. This arrangement would not only prove very satisfactory for determining the condition of the switchboard ammeters, but would be of inestimable value for temporarily replacing an instrument which it is found necessary to send away for repairs. Of course, a standard voltmeter would also be essential, but it would not be necessary to make provision for placing it in circuit.

While it is possible to insert a standard shunt by fitting it with terminals to engage the blades of the dynamo switch or making connection at the dynamo itself, it is usually very inconvenient and subject to error on account of the lack of knowledge or experience on the part of the person making the test. With compound-wound machines it is necessary to place the standard shunt in the leg of the circuit occupied by the dynamo shunt, and if connections are made at the machine it will often be found that the standard will indicate the output of the machine plus the field current, while the dynamo instrument indicates the output only. These difficulties would be overcome if the switchboard designer would provide the necessary connections for each ammeter, preferably on the front of the board, for if properly made they would not mar its appearance and would be most accessible. The labor involved in these additional connections would not materially increase the cost of the board and would accomplish much to allay or confirm suspicion directed toward the ammeters, often saving a great deal in the way of charges for checking and transportation on instruments which were really in good condition, not to mention the trouble incident to removing them from the switchboard.

ITEMS OF INTEREST FROM VARIOUS LOCALITIES.

THE properties of the Aberdeen (South Dakota) Gas and Electric Light Company have been sold by Mr. J. S. Bartholomew, of Grand Forks, to a syndicate of Aberdeen capitalists. The new name of the enterprise is that of the Aberdeen Gas Company, its capital has been readjusted, and its officers are: President, Charles A. Howard; Secretary, S. C. Hedger. The Company's offices are in the Northwestern Bank block, Aberdeen. We understand that important improvements will be made on the gas plant this season, particularly in respect of the distributing system.

MR JAMES GIBBONS, JR., of Pine Bluff, Ark., has been appointed Superintendent of the Seneca Falls and Waterloo (N. Y.) Gas Company. He assumed charge thereof last Thursday.

MR. ALBERT H. MERRITT, of Springfield, Mass., has been selected to take charge of the Waverly (N. Y.) Gas Light Company, which Company also controls the Athens (Pa.) and Sayre Gas Company.

THE plant and franchises of the Morristown (N. J.) Gas Light Company have been purchased by a syndicate, prominent in which are the following: United States Senator, John Kean, Elizabeth, N. J.; John I. Waterbury, President Manhattan Trust Company, N. Y. city; Mahlon Pitney, a prominent lawyer of New Jersey, and Robt. D. Foote, of the National Iron Bank, of Morristown.

THE authorities of San Francisco, Cal., have fixed the maximum selling rate for gas to private individuals in that city, for the year ending December 30th, 1902, at $1.40 per 1,000 cubic feet. Gas furnished to public buildings is to be sold at $1.35 per 1,000; and the rate for gas supplied to lamps maintained on account of the lighting of streets, parks, etc., is fixed at 9 cents per lamp per night, which charge is to include lighting, extinguishing and repairing. The public lamps are to be lighted 30 minutes after sunset and are to be extinguished 30 minutes before sunrise of each 24 hours. It is also provided in the ordinance that 150 Welsbach lamps, each carrying 3 burners, are to be maintained, at a charge of 15 cents per lamp per night.

THE American Bridge Company is under contract to furnish 36 bridges for the Chicago, St. Paul & Missouri Railway.

AT the annual meeting of the shareholders in the Hudson County (N. J.) Gas Company the following Directors were elected: E. F. C. Young, Cornelius Zabriskie, Hamilton Wallis, J. E. Hulshizer, Jr., Thomas H. Williams, Joseph D. Bedle, Randal Morgan, A. P. Hexamer, W. C. Heppenheimer, Elbert Rappleye, S. B. Dod, Myles Tierney, Walton Clark, P. F. Wanser and E. L. Young. At the subsequent meeting of the Directors these officers were elected: President, E. F. C. Young; Vice-President, Walton Clark; Secretary and Treasurer, Lewis Lillie; Asst. Secy., R. D. Miller; Asst. Treasurer, R. D. Young.

THE Peoples Gas and Electric Company, of Oswego, N. Y., has finally arranged its schedule of selling rates, the same to go into effect May 1st: On illuminating account, $1.50 per 1,000, net; on fuel and power accounts, $1.25 net.

THE Bucyrus (Ohio) Gas and Electric Light Company has been incorporrted. The incorporation means that the Bucyrus gas people are in full control of the local lighting situation in so far as that may be maintained from central stations. Messrs. Gormley, Gwynn and

Lemert have evidently good cause for smiling. May they always be able to hold their own.

THESE are the conditions under which the Suburban Gas and Electric Company will supply gas in the town of Revere, Mass.:

1. That the operations of the Company be subject in all respects to the general laws of the Commonwealth relating to gas companies.

2. That the net price to be charged shall never exceed $1.20 per 1,000 cubic feet, and that when the consumption of gas per capita of the total population of the town shall become 1,500 cubic feet per annum, the price shall be reduced to $1 per 1,000 cubic feet.

6. That all the labor of construction, except expert labor, be done by the citizens of Revere, at $2 per day of 8 hours.

7. That if the said Company shall have opened any of its streets, lanes or highways in the town of Revere in accordance with the permission herein granted, it shall be responsible for a period of 6 months after such work is accomplished for any repairs made necessary thereby.

8. That said Company shall furnish the Board of Selectmen, plans showing the location of all pipes laid by said Company, and will at any time give the Board of Selectmen information they may desire in regard to any work being done by said Company.

9. That all public buildings, whenever used for public purposes, be lighted free of cost.

10. That 18 months from date the price shall be $1.15 per 1,000 cubic feet.

ACCORDING to the *Morning Democrat*, of Carthage, Mo., the operating of the municipal electric lighting plant of that city, during the year 1900, cost $11,001.61. For this sum the city received in return the benefit of the illumination secured or obtained from the use of 28 arcs (1,200 candle power each), and 186 incandescent electric lamps, of 32-candle power each. Both sorts of lamps were operated on a moontable.

MEANTIME Mr. J. H. Enright, Superintendant of the Carthage Light Company, reports a good increase in the Company's gas output for 1900.

MESSRS. IRWIN REW, Edward E. Morrell, and Alfred H. Gross have filed papers incorporating the De Kalb County Gas Company, of De Kalb, Ills. It is capitalized in $200,000, and its stated object is to "furnish gas and electricity for all purposes."

THE Committee on Manufactures, Massachusetts Legislature, has reported a bill requiring gas companies to pay 4 per cent. per annum on deposits made as security by consumers, after such deposits have remained in the treasuries of the companies for a period exceeding six months.

MR. J. B. WOODRUFF, of Chicago, is endeavoring to secure a franchise for a gas works in Blue Island, Ills. He agrees to sell gas for all purposes at the rate of $1 per 1,000 cubic feet. While the many residents of Blue Island are quite in favor of a gas works, it is not likely that such a plant will be permitted there for some time to come, in that the Island has been for years operating an electric lighting plant on municipal account. The correspondent who forwarded the above information also incloses the following related statement recently put forth by Mr. O. W. Bourke, President of the Village Board: "It is my opinion that a franchise will never be granted to a gas company until somebody takes the present electric light plant off the hands of the corporation. It would not be reasonable to grant such a franchise, for it would oppose the corporate interests, especially at this time, as we have just gone to an expense of nearly $10,000 in refitting the electric plant. While residents of Blue Island may want a gas plant the village has not enough inhabitants to support both plants. I think I voice the sentiment of the Board in saying that it would be better for Blue Island if the present system were in the control of private parties, for it barely pays expenses in its present condition."

THE Louisville (Ky.) *Times* says that the Louisville Gas Company will refund $500,000 of 5 per cent. bonds at a lower rate of interest on April 1st. A call has been made for the outstanding bonds, which were issued in 1891, the proceeds having been expended in permanent improvements. The credit of the Gas Company is so good that President Snead believes the bonds can be placed on the market at a lower rate of interest. The bonds were issued with the proviso that they could be called in 10 years, at the option of the Company.

THE proprietors of the Watertown (N. Y.) Gas Light Company have determined to revise the selling schedule.

AT a meeting of the Racine (Wis.) Gas Light Company Mr. Henry H. Hyde was elected Secretary, vice Mr. F. G. Bigelow, of Milwaukee. Mr. Hyde will continue as the Company's Manager.

AT the annual meeting of the Paterson and Passaic (N.J.) Gas Company the officers chosen were: Directors, William Barbour, E. T. Bell, B. W. Spencer, Jno. R. Lee, W. B. Gourley, Randal Morgan, John Reynolds, J. W. Ferguson, John Agnew, Hobart Tuttle and Walton Clark; President, William Barbour; Vice-Presidents, E. T. Bell and B. W. Spencer; Treasurer, L. Lillie; Secretary and Asst. Treas., W. H. Rogers.

SUPERINTENDENT OSBORN, of the Chico (Cal.) Gas and Electric Company, had quite a "busy night" some time ago, on the occasion of the opening of the Company's handsome new offices, corner 2d and Salem streets. The office has a "good sized section" devoted to the display of gas ranges, heaters, etc., and plenty of space is allotted to the exhibiting of burners, gas and electric light fixtures, etc. The Chico Company, as before noted in the JOURNAL, is in complete control of the gas and electric lighting supply of that city.

AN important finding was made last month, in the case of Klein vs. Boston Gas Light Company, tried before Judge Wentworth of the Boston (Mass.) Municipal Court. Plaintiff was the owner of a drug store under the Hotel Pelham at the time of the great subway explosion, which occurred March 4th, 1897. He brought suit to recover damages to stock, fixtures and person occasioned in that disaster. The case took up considerable time, and when the evidence had all been presented, Judge Wentworth directed a finding for the defendant, on the ground that plaintiff had failed to establish the fact that the explosion had been caused by gas supplied by or under the control of the defendant.

HERE is the text of a ridiculous measure that is proposed before the Municipal Assembly as an ordinance for New York city—it is understood that "Fire Chief Croker" is the originator of the same: "All gas meters now located in cellars of all buildings within the city limits of Greater New York shall, within 90 days after the passage of this ordinance, be removed from such cellars and placed in the areaways or yards of such buildings inclosed in a fireproof vault, and said meters shall be connected from main by an iron pipe throughout, and pipe provided with a stopcock between meter and main; also stopcock at meter, and placed so that in case they should become detached they can be immediately shut off by members of the uniformed force of the Fire Department."

MANAGER DUNBAR, of the Elgin (Ills.) American Gas Company, has been authorized to announce a reduction in the selling rates. Under the new schedule the gross rate is put at $1.30 per 1,000, with a discount of 10 cents per 1,000 for prompt payment—within 10 days. It is also agreed that a concession of 5 cents per 1,000 cubic feet for each successive year is to be made until the net figure of $1 per 1,000 has been established.

MR. HENRY D. WALBRIDGE, General Manager of the Detroit City (Mich.) Gas Company, has been elected President of the Grand Rapids (Mich.) Gas Light Company. We understand that Mr. Paul Doty, now Secretary and General Manager of the Grand Rapids Company, will succeed Mr. Walbridge as Manager of the Detroit Company.

AT the annual meeting of the New Amsterdam Gas Company, of New York city, the Directors chosen were: John Sloan, J. C. Tomlinson, James Jourdan, A. N. Brady, E. S. Marston, Emanuel Lehman, W. A. Simonson, Moses Taylor, G. H. Church, W. B. Cardozo, J. W. Sterling, C. M. Carbonell and J. E. Gerard.

THE following regulations respecting the prices that may be charged for gas and electricity in Vallejo, Cal., take effect July 1st next: The maximum rate that may be charged for gas is $3 per 1,000 cubic feet. The maximum rate that may be charged for electric light is 15 cents per 1,000 watts, meter rates; provided that 50 cents shall be a minimum charge for lighting any one place, per month.

THE authorities of Scranton, Pa., through the recent action of the Select Council, have to all intent killed the scheme to grant an ordinance to the projectors of the Consumers Gas Company, a concern that

(*Concluded on page* 414.)

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Germany—Lemcke & Buechner, of New York.
England—Aug. Siegle, 30 Lime Street, London.

MONDAY, MARCH 18, 1901.

(*Continued from page* 413.)

hoped to divide the gas supply of Scranton with the existing Scranton Gas and Water Company.

COLONEL FRANK S. RICHARDSON, of the North Adams (Mass.) Gas Light Company, has announced a reduction in the selling rates which is equivalent to a concession of 10 per cent. over the existing charges. In a general way, it may be said that the new schedule calls for a payment of $1.44 per 1,000 on lighting account, and $1.08 per 1,000 on account of fuel and power use.

THE properties of the Carbon Light Company, of Louisiana, Mo., have been sold to Mr. L. M. Hall, of St. Louis.

REPRESENTATIVE ERICKSON, of the Illinois Legislature, is endeavoring to secure the passage of a measure declaring it to be unlawful for companies supplying gas or electricity for light, heat or power purposes to charge varying rates for such service.

MAYOR THAYER, of Norwich, Conn., desires that "a thorough investigation of the plant of the Norwich Gas and Electric Company shall be made." He also further explains his desire on the ground that the Company is charging too much for the products—gas and electric—supplied by it.

The Market for Gas Securities.

The local gas share market was fairly steady during the week, with quite a lot of trading in Consolidated, in the main for the account of brokers who are supposed to represent good people. There was also in evidence transactions to cover some old-time outstanding short trades. The strangling of the bill to engage the local authorities in gas manufacture on municipal account was expected; we imagine even by Mr. Donnelly. There was some inquiry for Standard, common and preferred, quite some blocks of which remain in independent control.

Brooklyn Union shows no particular change, the trading in it being quite listless. There is little doubt that an understanding of moment as to its future exists between its owners and those of the Consolidated. Peoples, of Chicago, is in good demand, at advancing prices, but at the quoted rates it is still well under its intrinsic value. Lacledes are strong, and a sharp advance in Syracuse gas is reported. Cincinnati gas is almost at the 200 mark again. You can't keep a good thing permanently down. The gas bond market is quite active.

Gas Stocks.

Quotations by George W. Close, Broker and Dealer in Gas Stocks.

16 WALL STREET, NEW YORK CITY.

MARCH 18.

☞ All communications will receive particular attention.
☞ The following quotations are based on the par value of $100 per share.

N. Y. City Companies.	*Capital.*	*Par.*	*Bid.*	*Asked.*
Consolidated	$73,177,000	100	210¾	211
Central Union, Bonds, 5's.	3,000,000	1,000	108½	109½
Equitable Bonds, 6's	1,000,000	1,000	105	..
" 1st Con. 5's	2,300,000	1,000	120	..
Metropolitan Bonds	658,000	..	108	112
Mutual	3,500,000	100	204	206
" Bonds	1,500,000	1,000	100	102
Municipal Bonds	750,000	..	..	..
New Amsterdam Gas Co..				
Bonds, 5's	11,000,000	1,000	103½	104
Northern Union, Bonds, 5's.	1,250,000	1,000	104	106
New York and East River .				
Bonds 1st 5's	3,500,000	1,000	104	106
" 1st Con. 5's	1,500,000	..	115	..
Richmond Co., S. I	348,650	50	70	..
" Bonds	100,000	1,000	..	..
Standard	5,000,000	100	130	131
Preferred	5,000,000	100	148	150
Bonds, 1st Mortgage, 5's	1,500,000	1,000	116	118
Yonkers	299,650	500	130	..
Out-of-Town Companies.				
Brooklyn Union	15,000,000	100	207	208
" " Bonds (5's)	15 000,000	1,000	118	119
Bay State	50,000,000	50	1	1½
" Income Bonds	2,000,000	1,000	..	75
Binghamton Gas Works	450,000	100	22	24
" 1st Mtg. 5's	503,000	1,000	99½	100
Boston United Gas Co.—				
1st Series S. F. Trust	7,000,000	1,000	82	85
2d " " "	3,000,000	1,000	47½	50
Buffalo City Gas Co.	5,500,000	100	10¼	12
" " Bonds, 5's	5,250,000	1,000	79	80
Capital, Sacramento	500,000	50	..	35
Bonds (6's)	150,000	1,000	..	..
Central San Francisco	2,000,000	..	106	108
Chicago Gas Co. Guaranteed Gold Bonds	7,650,000	1,000	104	106
Cincinnati G. & C. Co.	8,500,000	100	199	200
Columbus (O.) Gas Co., 1st Mortgage Bonds	1,500,000	1,000	106	107
Columbus (O.) Gas Lt. & Heating Co	1,682,750	100	60	65
Preferred	3,026,500	100	84	85
Consumers, Jersey City Bonds	600,000	1,000	102	104
Consumers, Toronto	1,700,000	50	215	218
Consolidated, Baltimore	11,000,000	100	58½	59
Mortgage, 6's	3,600,000	..	..	120
Chesapeake, 1st 6's	1,000,000	..	..	..
Equitable, 1st 6's	910,000	..	..	..
Consolidated, 1st 5's	1,490 000	..	..	112
Consolidated Gas Co. of N.J.	1,000,000	100	12	16
" Con. Mtg. 5's	380,000	1,000	80	85
Consolidated G. & E. Co.'s., Little Falls, N.Y.	90,000	100	..	106
Bonds	75,000	..	..	106
Detroit City Gas Co	4,560,000	50	88	90
" Prior Lien 5's	4,737.000	1,000	99½	100
Detroit Gas Co., 5's	381,000	1,000	100	101
" Inc. 5's	16,000	100	94	96
Equitable Gas & Fuel Co., Chicago, Bonds	2,000,000	1,000	..	107
Essex and Hudson Gas Co.	6,500,000	..	35	40
Fort Wayne	2,000,000	..	35	45
" Bonds	2,000,000	..	55	..
Grand Rapids Gas Lt. Co..	1,000,000	50	103	105
" 1st Mtg. 5's	1,225,000	1,000	..	..
Hartford	750,000	25	240	250
Hudson County Gas Co., of New Jersey	10,500,000	..	25	..
" Bonds, 5's	10,500,000	..	101	103
Indianapolis	2,000,000	..	45	50
" Bonds, 6's	2 650,000	..	94⅞	95

(*Concluded on page* 415.)

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(Continued from page 414.)

Jackson Gas Co.	250,000	50	70	75
" 1st Mtg. 5's	265,000	1,000	101	102½
Kansas City Gas Light Co., of Missouri	5,000,000	100	..	36
Bonds, 1st 5's	3,822,000	1,000	101½	103
Laclede, St. Louis	8,271,000	100	80⅝	81⅛
Preferred	2,500,000	100	39	100
Bonds	10,000,000	1,000	108½	109
Lafayette Gas Co., Ind.	1,000,000	100	..	.
Bonds	1,000,000	1,000	56	59
Louisville	2,570,000	50	110	120
Madison Gas & Elec. Co.	400,000	100	63	65
" 1st Mtg. 6's	350,000	1,000	102½	108
" 6 per cent. scrip, due 1910	100,000	25	87	89
Montreal, Canada	2,000,000	100	182	184¾
Newark, N. J., Con. Gas Co	6,000,000	..	..	55
Bonds, 6's	4,600,000	..	..	103
New Haven	1,000,000	25	280	300
Nashville Gas Lt. Co.	1,000,000	50	110	..
Oakland, Cal.	2,000,000	..	46	47
" Bonds	750,000	..	..	..
Peoples G. L. & Coke Co., of Chicago	25,000,000	100	104⅞	105
Peoples Gas Lt. & Coke Co., Chicago, 1st Mortgage	20,100,000	1,000	..	..
2d "	2,500,000	1,000	104	105
Rochester Gas & Elec. Co.	2,150,000	50	88	..
Preferred	2,150,000	50	118	..
Consolidated 5's	2,000,000	..	87½	90
San Francisco, Cal.	10,000,000	100	47¼	47⅛
St. Paul Gas Light Co.	1,500,000	100	45	47
1st Mortgage 6's	650,000	1,000	82	85
Extension, 6's	600,000	1,000	..	..
General Mortgage, 5's	2,465,000	1,000	88	90¼
St. Joseph Gas Co.	1,000,000	100	35	40
" 1st Mtg. 5's	750,000	1,000	96½	98
Syracuse, N. Y.	1,750,000	100	18	19
Bonds	1,612 000	1,000	88½	93
Washington, D. C	2,600,000	20	307½	312½
First mortgage 6's	600.000		.	..
Western, Milwaukee	4,000,000	100	93¾	95
Bonds, 5's	3,830.500	..	1 61	107½
Wilmington, Del.	600,000	50	200	201

DIVIDEND NOTICE.

OFFICE OF THE UNITED GAS IMPROVEMENT CO., N. W. CORNER BROAD AND ARCH STS., PHILA., PA., Mar. 13, 1901.

The Directors have this day declared a quarterly dividend of 2 per cent. (one dollar per share), payable April 13th, 1901, to stockholders of record at the close of business, Mar. 30. Checks will be mailed.

1345-4 LEWIS LILLIE, Treasurer.

Position Wanted.

A gentleman, who is a practical machinist, and has had four years' working experience as manager of a water gas plant, in a town of 10,000 people, is open to an engagement as manager or superintendent.

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WANTED.

Situation as Superintendent of a Gas Works,

By a man of 34, who has had 12 years' experience in managing and enlarging gas works. Can give good references.

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Coal Hoist, Engine, Derrick, Tubs, Ropes, Etc.

Complete working order. Capacity 150 tons per day. Address,

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One Six-Inch, Automatic Connelly Street Governor, in good condition.

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ALL OF THE OLD IRON BENCH WORK

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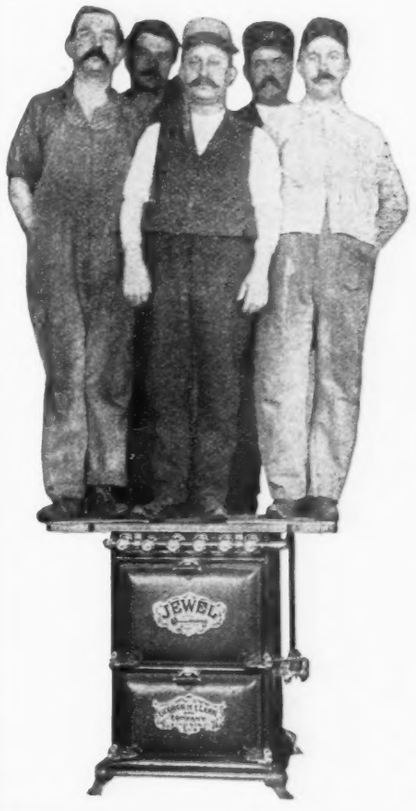

These Mechanics
helped to MAKE it,
But they together
cannot BREAK it.

Write For Our New Catalog.

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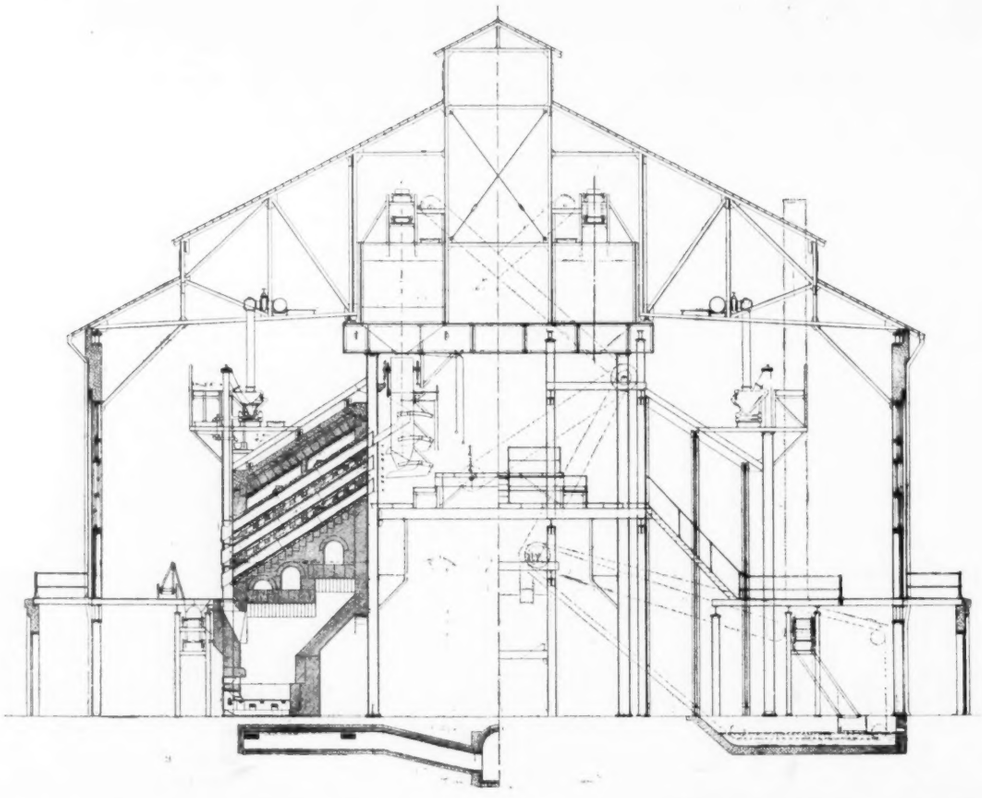
THE COZE SYSTEM



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WITH THIS SYSTEM

THE COST OF MAKING COAL GAS IS MATERIALLY REDUCED BY ECONOMICAL HANDLING OF COAL AND COKE. IN A MEDIUM SIZED WORKS OVER 50 PER CENT. IS SAVED, AND EVEN THE SMALLER PLANTS CAN BE OPERATED AT A MUCH LESS EXPENSE THAN BY ANY OTHER METHOD.

COZE PATENTS ARE OWNED BY THE

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THIS COMPANY

IS THE OLDEST MANUFACTURER OF GAS RETORTS IN THE UNITED STATES, AND REFERS TO SUPERINTENDENTS OF GAS WORKS GENERALLY AS TO THE MERITS OF THE LACLEDE HORIZONTAL AND INCLINED BENCHES AND SETTINGS.

OUR CLAY STANDS EVERY TEST FOR STRENGTH AND DURABILITY.

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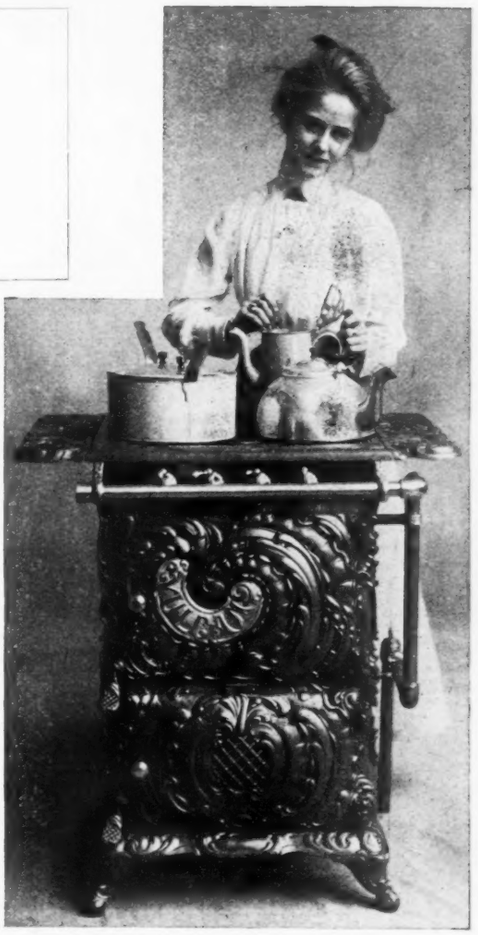
THE "PERFECT" AND "VULCAN" GAS RANGES

ARE TOO WELL KNOWN TO NEED DETAILED DESCRIPTION.

The modern "Venus of the kitchen" must have the modern

"VULCAN."



Venus of old did not live happily with the old god of Fire.

But of all the household gods of the New Woman, none is more prized than the

"VULCAN" GAS RANGE,

a sure promoter of domestic felicity.

It has reached perfection in the art of making Fire a useful, instantly available, comfort promoting, cleanly and economical household servant.

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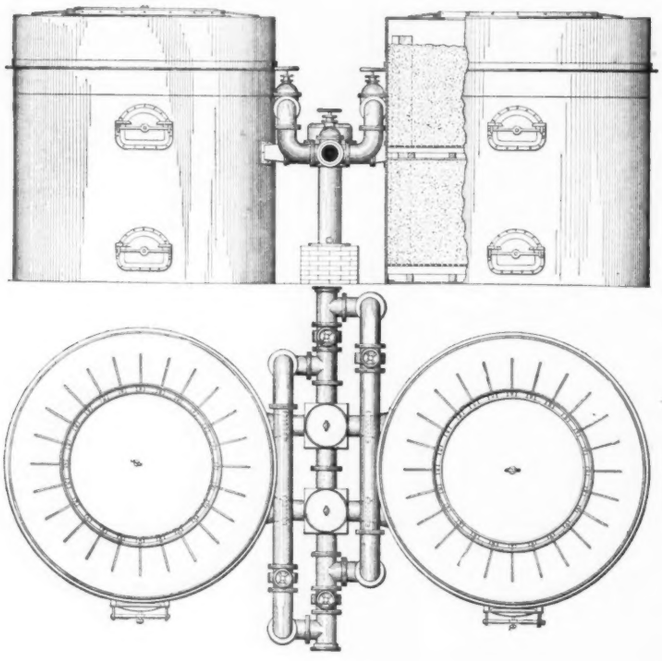

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Patented in UNITED STATES, CANADA, GREAT BRITAIN, FRANCE, BELGIUM, GERMANY, AUSTRIA AND HUNGARY.

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The unauthorized use of any system or method of purification, whereby gas mingled with oxygen is made to flow in one general direction through the purifying mass, and then made to flow through the mass in a directly opposite direction, infringes the above patents!

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Saltley Works, Birmingham, England (Second Contract)	2,000,000
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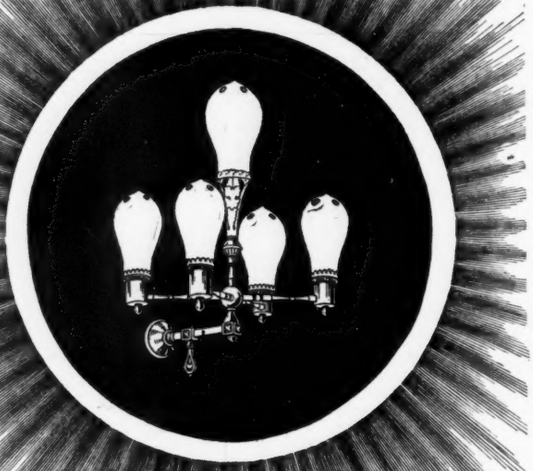

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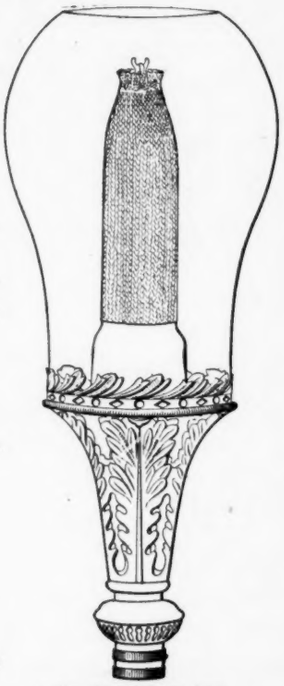

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Burner No.	0	consumes	8-10	cubic foot,	30-candle	power.
"	1	"	1	"	35	"
"	2	"	2	cubic feet,	70	"
"	3	"	3	"	105	"
"	4	"	4	"	140	"
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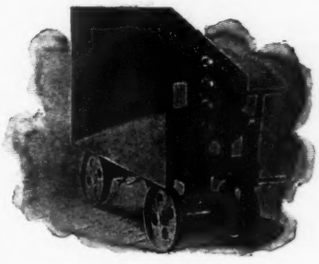

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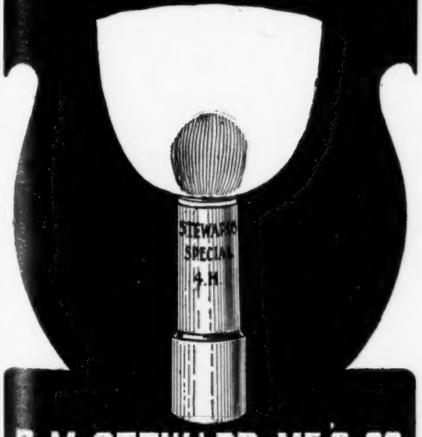

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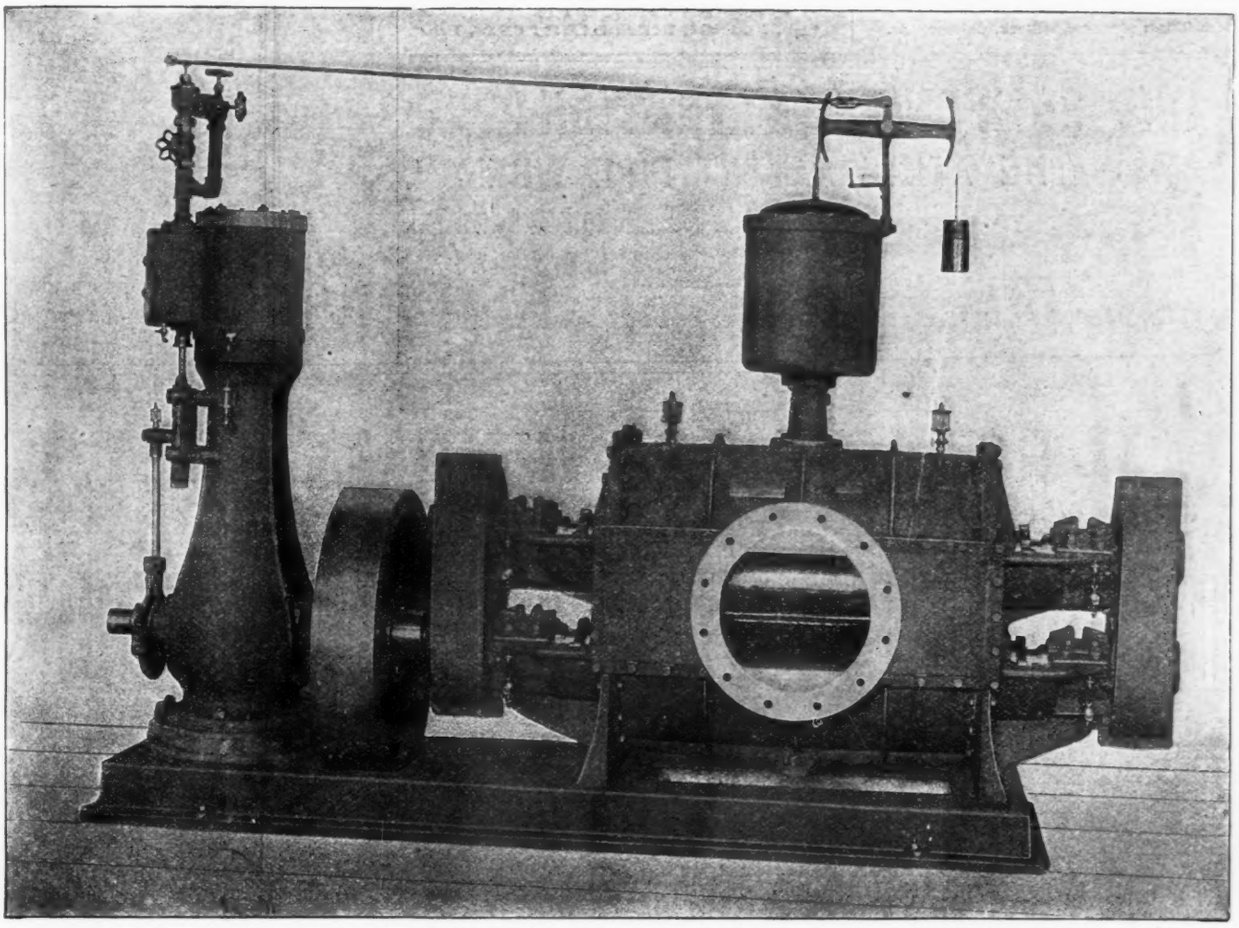

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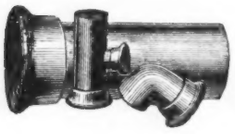

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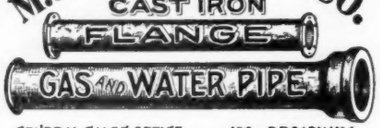

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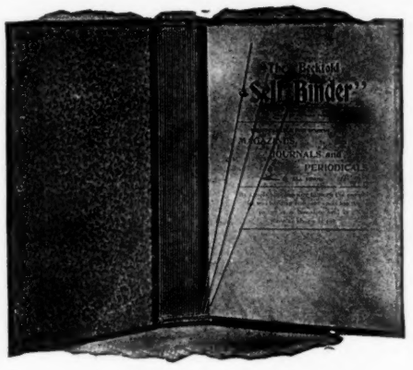

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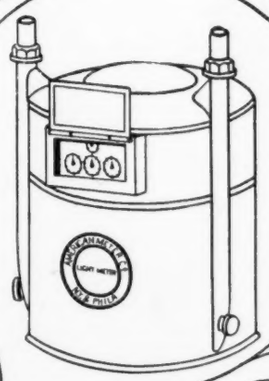

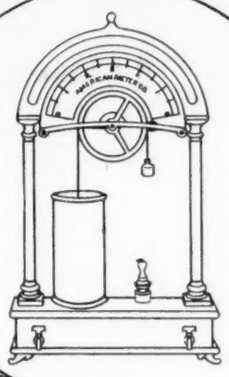

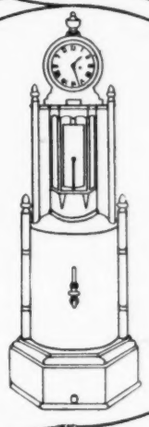

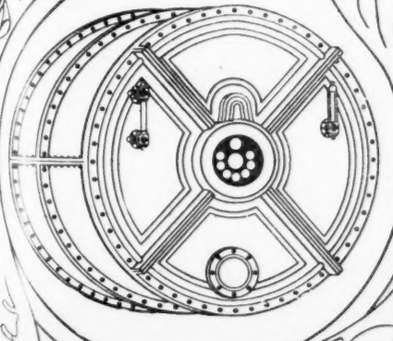

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NEW YORK AND PHILADELPHIA,

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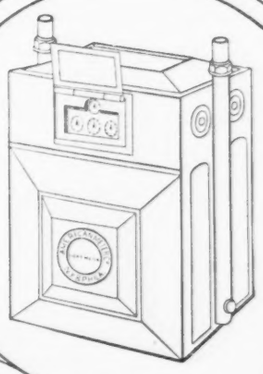
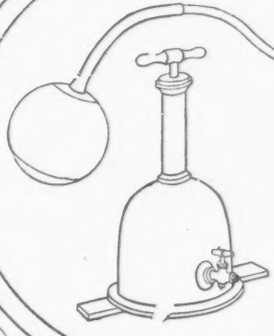
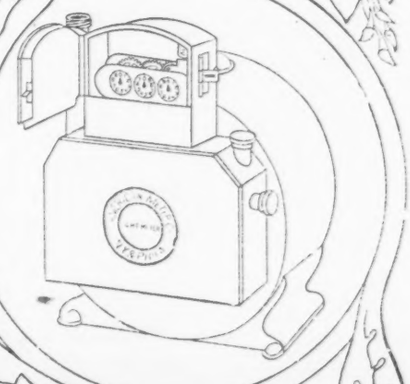






PUBLIC LIGHTING TABLE.

APRIL, 1901.

Day of Week.	Date.	Table No. 1. Following the Moon. Light.	Table No. 1. Following the Moon. Extinguish.	Table No. 2. New York City. All Night Lighting. Light.	Table No. 2. New York City. All Night Lighting. Extinguish.
				P.M.	A.M.
Mon.	1	3.40 AM	4.50 AM	6.10	4.55
Tue.	2	No L.	No L.	6.15	4.40
Wed.	3	No L. FM	No L.	6.15	4.40
Thu.	4	No L.	No L.	6.15	4.40
Fri.	5	7.00 PM	9.10 PM	6.15	4.40
Sat.	6	7.00	10.10	6.15	4.40
Sun.	7	7.00	11.10	6.15	4.40
Mon.	8	7.00	12.00	6.15	4.40
Tue.	9	7.00	12.50 AM	6.25	4.30
Wed	10	7.00	1.30	6.25	4.30
Thu.	11	7.00 LQ	2.20	6.25	4.30
Fri.	12	7.00	2.50	6.25	4.30
Sat.	13	7.00	3.30	6.25	4.30
Sun.	14	7.10	4.00	6.25	4.30
Mon.	15	7.10	4.20	6.25	4.30
Tue.	16	7.10	4.20	6.30	4.20
Wed.	17	7.10	4.20	6.30	4.20
Thu.	18	7.10 NM	4.20	6.30	4.20
Fri.	19	7.10	4.20	6.30	4.20
Sat.	20	7.10	4.20	6.30	4.20
Sun.	21	7.10	4.10	6.30	4.20
Mon.	22	7.10	4.10	6.30	4.20
Tue.	23	11.00	4.10	6.40	4.10
Wed.	24	11.40	4.10	6.40	4.10
Thu.	25	12.20 AM FQ	4.10	6.40	4.10
Fri.	26	12.50	4.10	6.40	4.10
Sat.	27	1.20	4.10	6.40	4.10
Sun.	28	1.50	4.00	6.40	4.10
Mon.	29	2.10	4.00	6.40	4.10
Tue.	30	2.40	4.00	6.45	4.00

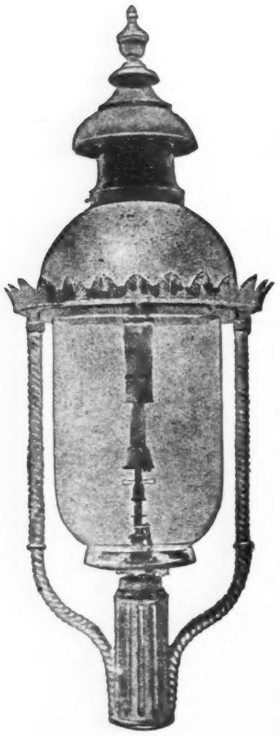
TOTAL HOURS LIGHTING DURING 1901.

By Table No. 1.	Hrs.Min.	By Table No. 2.	Hrs.Min.
January	220.10	January	423.20
February	192.30	February	355.25
March	180.00	March	355.35
April	158.30	April	298.50
May	140.40	May	264.50
June	135.40	June	234.25
July	138.00	July	243.45
August	156.20	August	280.25
September	174.40	September	321.15
October	202.30	October	374.30
November	220.40	November	401.40
December	241.30	December	433.45
Total, yr.	2161.10	Total, yr.	3987.45

NEW YORK, 33 Nassau St. PHILADELPHIA, Broad and Arch Sts. CHICAGO, 54 Lake St.

Welsbach Street Lighting Company

.... OF AMERICA ....



No. 36.

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Which includes its specially DESIGNED AND PATENTED BURNER for STREET and PARK LIGHTING exclusively.

Uniformly SUCCESSFUL in seventy-five Cities and Towns.

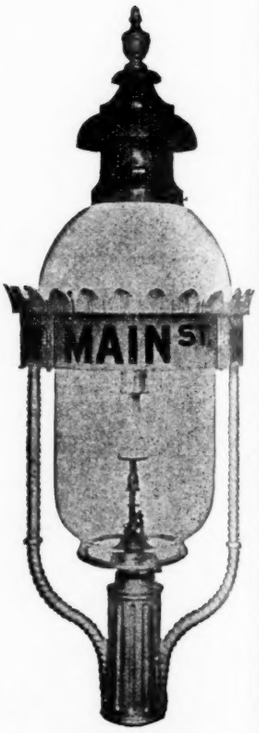
By means of the Welsbach System of street lighting the superiority of GAS over electricity for street lighting has been fully demonstrated.

POINTS OF MERIT:

It is { Economical, Attractive, Successful, Up-to-date.

IT LIGHTS THE STREET.

Where there are no gas mains we can furnish an equally good light by our SELF-GENERATING NAPHTHA WELSBACH BURNER, and thereby supply a uniform light in all localities.



No. 38.

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THE INCOMPARABLE

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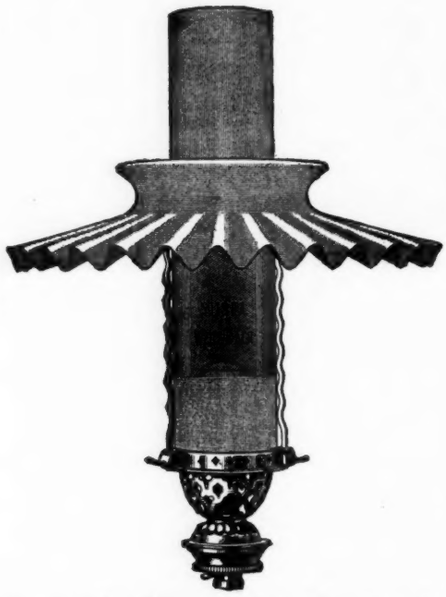
FINEST EXAMPLE

OF INCANDESCENT

GAS LIGHT

EVER EXHIBITED.



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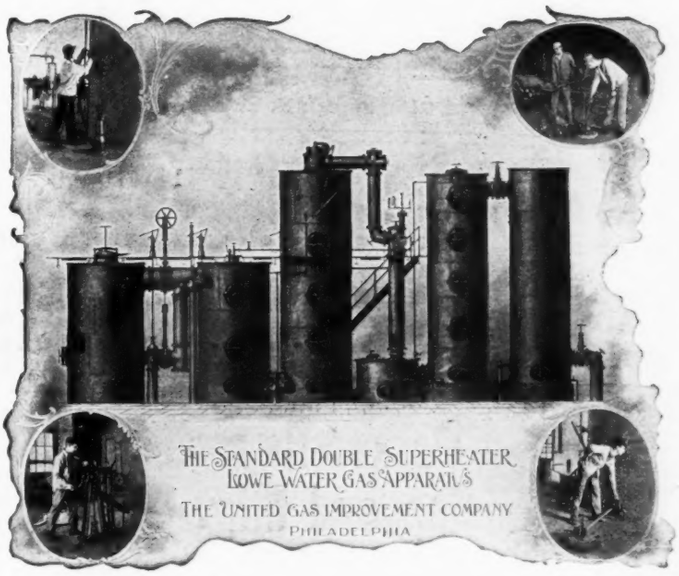
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LOWE WATER GAS APPARATUS
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Standard Fire Brick and Gas Retorts.

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OFFICE, 418 to 422 East 23d St., N. Y.

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In Kegs, 100 to 200 " " 6 " "
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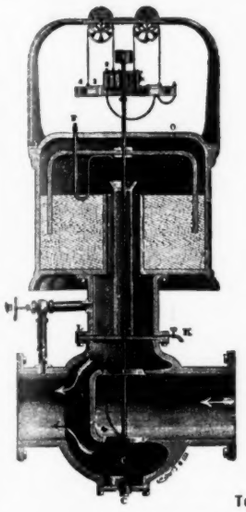

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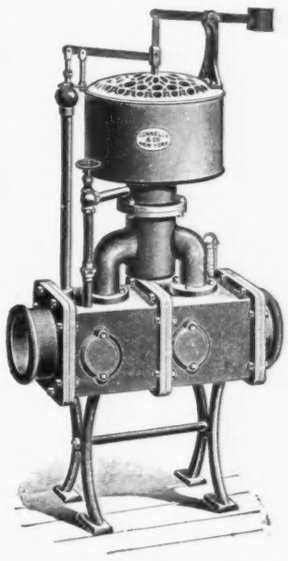

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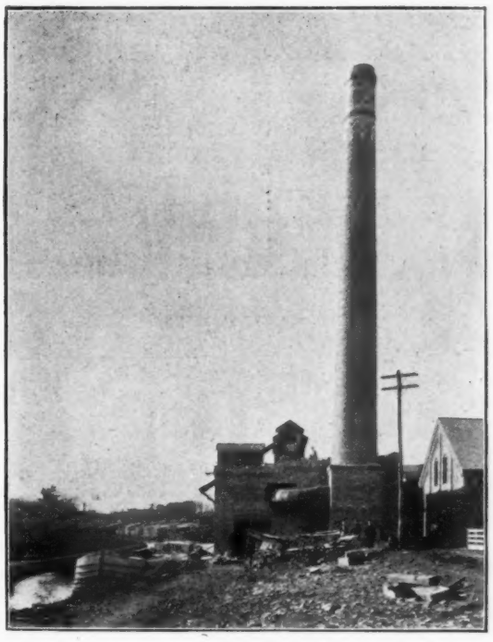

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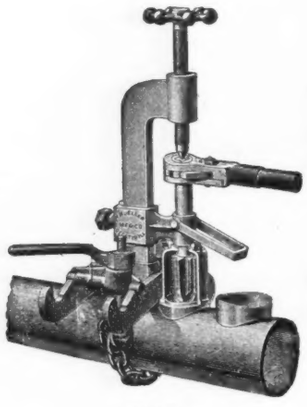

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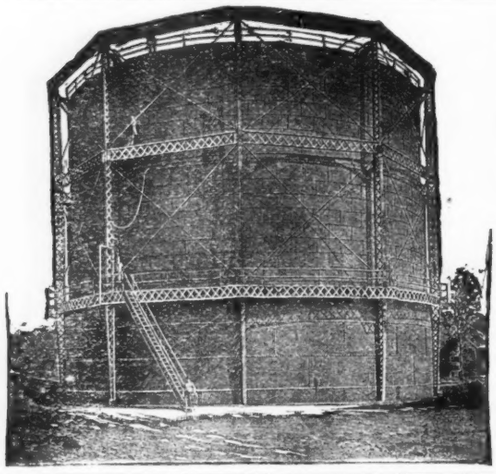

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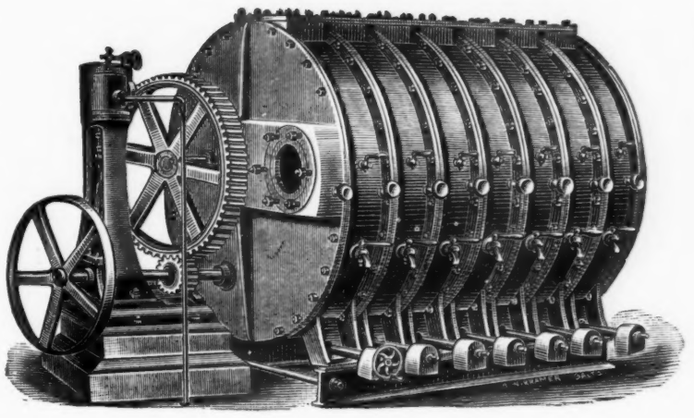

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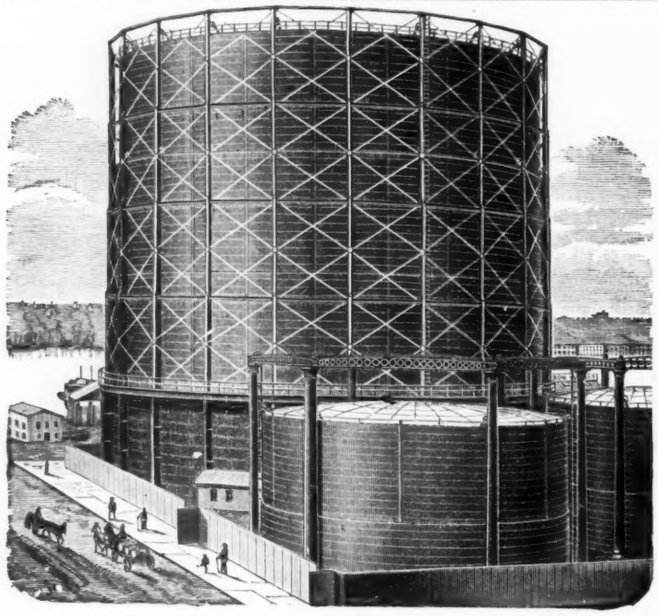

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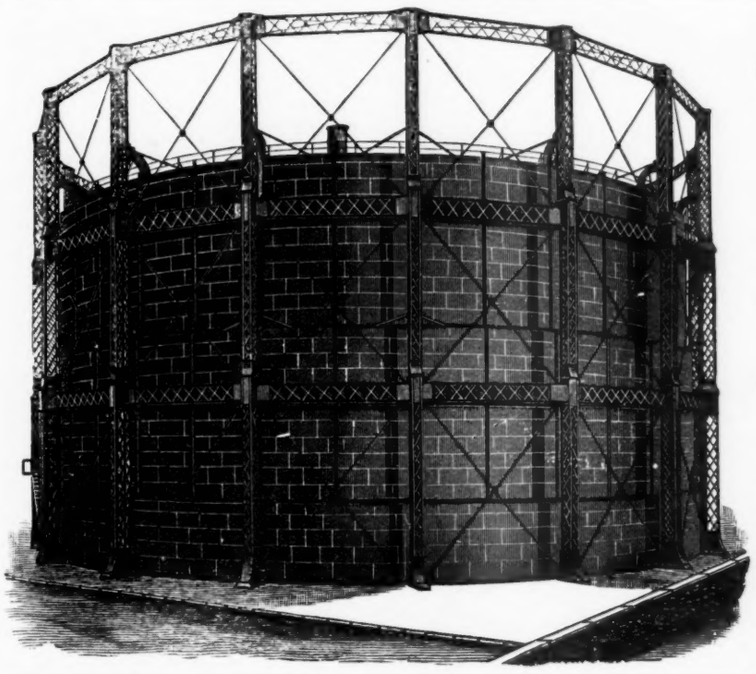

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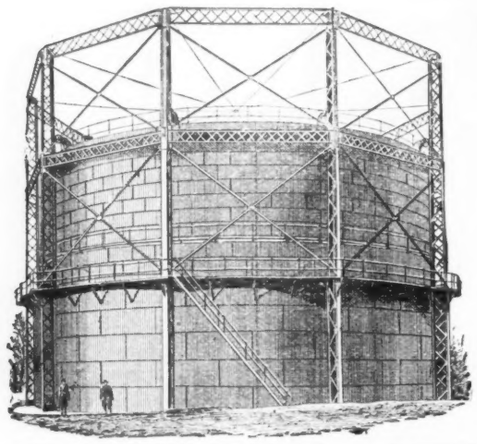

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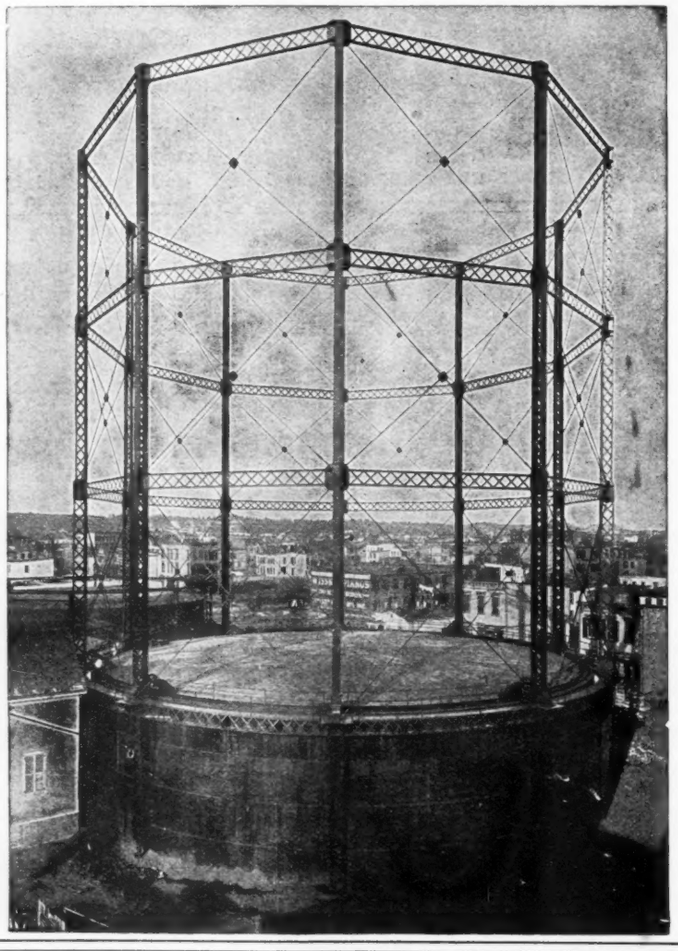

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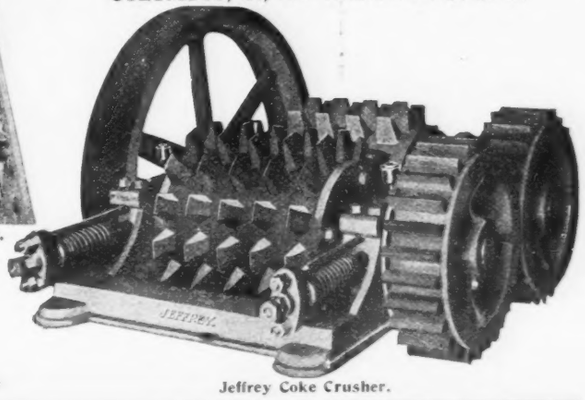

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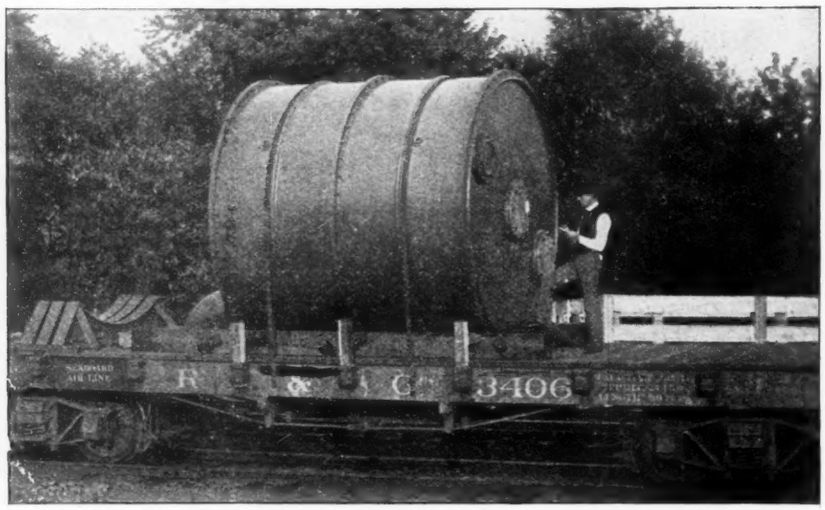

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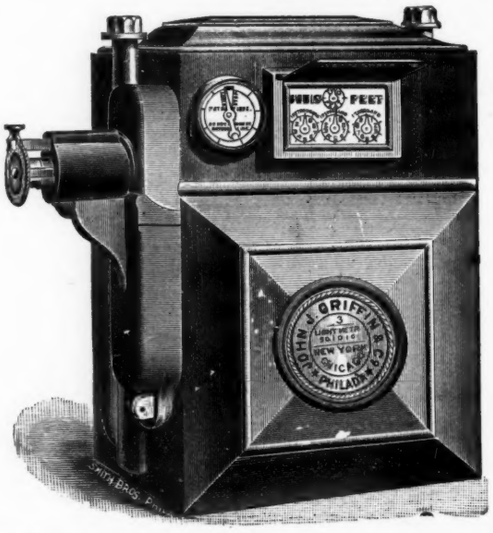

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